

TRIAL EXHIBIT 154

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

MARK SNOOKAL, an individual,

Plaintiff,

vs.

CHEVRON USA, INC., a California
corporation; and DOES 1 through 10,
inclusive,

Defendants.

Case No.2:23-cv-6302

Rebuttal Expert Report of Chen Song, Ph.D.

September 3rd, 2024

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I. Assignment

1. I have been retained by Sheppard Mullin Richter and Hampton, LLP (“Counsel”), counsel for Chevron USA, Inc. (“Chevron”), to review and evaluate the expert report by Charles L. ,Baum, Ph.D., dated August 16, 2024 (“Baum Report”).¹ It is my understanding that Plaintiff Mr. Mark Snookal has filed disability discrimination, age discrimination, and wrongful constructive discharge claims against Chevron. It is my understanding that Plaintiff relies on the Baum Report to “provide analysis of the lost earnings and lost employment benefits for Mark Snookal (Mr. Snookal) due to the rescission of a position in Escravos, Nigeria by Chevron USA, Inc. (Chevron) in or around August 2019 and a subsequent employment termination from Chevron in or around September 2021.”²
2. I may supplement or revise this report on a later date if additional relevant information becomes available to me. I may respond to any additional reports or opinions by any experts retained by Mr. Snookal. If called upon to testify at trial, I may rely upon certain demonstratives based on my analysis.

II. Qualifications

3. I am a Senior Vice President at Cirque Analytics, an economic and financial consulting firm that provides economic research and analysis to public and private clients in the United States and abroad.
4. I hold a Ph.D. in economics from the University of Chicago, with one of my fields of specialization was Labor Economics which is the application of Economics and Statistics to the study of labor markets, and a B.A. degree in Mathematics and Economics from Agnes Scott College. Since receiving my Ph.D., I have provided economic and statistical analyses related to damages and liability in class action

¹ Dkt. 1, Complaint for Damages filed on August 3, 2023, Case No.: 2:23-cv-6302 (“Complaint”).

² Baum Report, ¶2.

disputes. I have also maintained my connections with the academic community. I taught a course on Labor Economics and Human Resources at the University of California, Irvine. I was an Adjunct Assistant Professor at the California State University, Los Angeles, where I taught a course on Financial Institutions. I have been an instructor with the Los Angeles Chartered Financial Analyst (CFA) Review program, for which I have been teaching Risk Management for over ten years. A true and correct copy of my curriculum vitae is appended to this report as **Attachment A.**

5. The opinions expressed in this report are based on the analyses that I, or Cirque Analytics Staff at my direction and supervision, have conducted. Cirque Analytics is compensated for my time at an hourly rate of \$750. Hourly rates for the team from Cirque Analytics range from \$295 to \$470. The amount of professional fees in this matter is not contingent on the outcome of the litigation.

III. Summary of Rebuttal Calculations

6. My understanding is that Dr. Baum's calculation was based on the assumption that Plaintiff Mr. Snookal's claim of wrongful constructive termination would prevail. If Plaintiff does not prevail on this claim, and instead is found to have voluntarily resigned from Chevron, Mr. Snookal would not be entitled to any economic loss.
7. Based on my review of the case documents and the Baum Report, if the Trier of Fact finds for Mr. Snookal's claims:
 - a) Mr. Snookal's maximum adjusted earnings loss (excluding pension) ranges between \$470,936 (assuming he would have remained in grade 22) and \$603,247 (assuming he would have moved up to grade 23 after six months). This range is conservative because the anticipated length of the Escravos assignment could have lasted less than four years. For example, if the assignment lasted until the

end of 2021, Mr. Snookal's economic losses (excluding pension), would range between \$234,280 and \$304,083 (**Rebuttal Exhibits 1-2**).³

- b) Mr. Snookal's maximum pension loss ranges between \$49,360 (assuming he would have remained in grade 22) and \$62,258 (assuming he would have moved up to grade 23 after six months). Again, this range is conservative because the anticipated length of the Escravos assignment could have lasted less than four years, resulting in smaller pension losses (**Rebuttal Exhibits 1-2**).
- c) But-For duration of the Escravos assignment would not have exceeded four years, therefore Dr. Baum has no basis to extend but-for loss calculation beyond August 1, 2023, four years after Mr. Snookal applied for the REM position.
- d) Starting from September 2023, Mr. Snookal's total earnings and benefits (including retirement benefits) at Georgia-Pacific exceeded his but-for Chevron's total earnings and benefits, therefore Dr. Baum has no basis to extend any loss calculation beyond August 2023.
- e) Dr. Baum has not disclosed how he calculated pension losses. Pension loss amounts in Tables 1 and 2 of the Baum Report are grossly overestimated.
- f) I find other calculation errors in the Baum Report which inflate economic losses.

IV. Information Relied Upon

- 8. To-date, I have received the following categories of information from Counsel.
 - a) Complaint for Damages;
 - b) Defendant Chervron USA, Inc.'s Response to Plaintiff Mark Snookal's Sepcial Interrogatories (Set 2):
 - c) Deposition of Mark Snookal taken on May 10, 2024 ("Snookal Deposition");
 - d) Chevron personnel and payroll documents for Mr. Snookal;

³ I will calculate the pre-judgment interest at the request of the Trier of Fact.

- e) Chevron Benefits Records for Mr. Snookal;
 - f) Mr. Snookal's 2023 W-2 statements Georgia Pacific Wauna LLC;
 - g) Various documents related to Chevron location premiums by area of assignment, Chevron payroll renumeration report Escravos premium calculation in July 2019, Chevron rotational expatriate assignments, Chevron tax equalization policy;
 - h) Nippon Dynawave Packaging, Longview, Washington's offer of employment to Mr. Snookal on August 3, 2021;
 - i) Georgia Pacific Wauna LLC's offer of employment to Mr. Snookal on July 7, 2023;
 - j) Performance bonus targets at Chevron by pay grade for 2019-2021; and
 - k) Mr. Snookal's 2018-2021 pay stubs at Chevron.
9. A detailed enumeration of documents received is provided in **Attachment B**. Additionally, I have relied on all the information sourced in the exhibits and footnotes of this report.

V. Mr. Snookal's Employment Background

10. It is my understanding that "[o]n January 12, 2009, Chevron hired Mr. Snookal in the position of Analyzer Designs Engineer in the Technical Services Department depart at Chevron's El Segundo refinery...In 2011, Mr. Snookal was promoted to Maintenance Supervisor – Analyzer and Digital Group...In 2013, Mr. Snookal was promoted again to Analyzer Reliability Improvement Champion in the Technical Services Department... In 2016, Plaintiff Snookal was promoted yet again to Instrumentation, Electrical and Analyzer Reliability Team Lead in the Reliability Department."⁴

⁴ Complaint, ¶¶7-11.

11. It is my understanding that “[i]n 2019, Mr. Snookal applied for the Reliability Engineering Manager (“REM”) position, located in Escravos, Nigeria, with a salary grade 22.”⁵ It is my understanding that “Chevron’s offer to Snookal to work in Escravos was contingent on obtaining the appropriate work authorization and successfully passing a Medical Suitability for Expat Assignment (“MSEA”) examination, which is required for all Expatriate assignments.” Mr. Snookal understood that the job offer was contingent on being approved medical.⁶ It is my understanding that Escravos falls under the locations within Nigeria with “the lowest level of available medical care.”⁷
12. It is my understanding that Mr. Snookal went through the MSEA examination in July/August 2019, and that “[b]ased on a review of all of the medical information, and the medical expertise of the doctors in Nigeria, who have firsthand information of the working conditions and associated risks, Chevron Nigeria Limited ultimately concluded there was a significant risk of substantial harm to Snookal’s health or safety and/or the health and safety of others and did not clear him to work in Escravos.”⁸
13. It was my understanding that Mr. Snookal left Chevron on August 20, 2021⁹ and by that time he had already lined up a replacement position of E/I Maintenance Superintendent at Nippon Dynawave Packaging Co. in Longview, Washington (“Nippon Dynawave”) in August, 2021 with official start date of September 6, 2021.¹⁰

⁵ Complaint, ¶12. Mr. Snookal applied for a position in Escravos, Nigeria in May, 2019. See Deposition of Mark Jordan Snookal, May 10, 2024 (“Snookal Depo”), 35:9-13.

⁶ Snookal Depo 37:9-24, 45:17-24.

⁷ Defendant Chevron USA, Inc.’s Responses to Plaintiff Mark Snookal’s Special Interrogatories (Set 2), August 13, 2024 (“Defendant RoG Responses”), p. 5.

⁸ Defendant RoG Responses, p.9. Mr. Snookal was informed that he was not fit for duty in Escravos, Nigeria on August 15, 2019. See Snookal Depo 78:25-79:6.

⁹ Snookal Depo 223:2-10. Mr. Snookal also testified to the August 4, 2021 Chevron separation date (Snookal Depo 274:18-20).

¹⁰ NDP-SDT_000001-2, Offer of Employment to Mark Snookal on August 3, 2021 from Nippon Dynawave (“Nippon Dynawave Offer”).

Nippon Dynawave offered Mr. Snookal a base pay of \$150,000 with an STI Annual Incentive target of 20% of the base. It additionally offered benefits including medical, dental, life and disability coverage, 401(k) plan, and three weeks' vacation.¹¹ Mr. Snookal was additionally eligible for "Tier II relocation package" to assist him with moving from El Segundo to Longview, Washington.¹²

14. Approximately two years later on August 14, 2023, Mr. Snookal resigned from Nippon Dynawave effective August 25, 2023.¹³ Shortly before his resignation in July 2023, Mr. Snookal had already secured a second replacement position as Electrical Superintendent at Georgia-Pacific Wauna LLC ("Georgia-Pacific"), with a base salary of \$180,000, sign-on bonus of \$11,000, eligibility for performance pay, 160 hours of paid vacation time annually, and participation retirement savings plans.¹⁴ The retirement plan at Georgia-Pacific consists of a 401(k) Plan with dollar-for-dollar matching up to 3% of eligible pay and \$.50 for every \$1 on the next 5% of pay (up to 5.5% matching), and 3-5% fixed contribution based on eligible pay and years of service, summing up to be between 8.5% and 10.5% in total company contribution.¹⁵ Mr. Snookal started working at Georgia-Pacific on September 1, 2023.¹⁶

VI. Methodology for Calculating Economic Loss

15. The basic model for calculating economic loss in a wrongful termination matter includes two primary components: The first component is the calculation of the Plaintiff's but-for income, or what the Plaintiff would have earned in the absence of the alleged claims. The second component is the calculation of the Plaintiff's offset

¹¹ Nippon Dynawave Offer.

¹² Nippon Dynawave Offer.

¹³ NDP-SDT_0000003, letter from Mark Snookal to Mike Savageaux.

¹⁴ SNOOKAL-01526-27 Offer of Employment to Mark Snookal on July 7, 2023 from Georgia-Pacific Wauna LLC ("Georgia-Pacific Offer").

¹⁵ SNOOKAL-01479 2023 GP Benefits Snapshot.

¹⁶ Mark Snookal earnings statement period beginning 9/1/2023 and ending 9/15/2023.

income, which represents, since employment separation, replacement earnings in comparable position(s). Offset income is subtracted from but-for income to calculate economic loss and is then present-valued to the valuation date.

16. Economic loss stops when Plaintiff's offset income catches up to but-for income.

Economic loss can also stop at a pre-determined date such as employment contract end date, or a but-for position elimination date.

17. For my rebuttal opinions, I have conducted my own calculations of loss of earnings for Mr. Snookal if his claims are found to be true by the Trier of Fact. I rely both on the information provided to me to-date, as well as on my education and training as a labor economist. If and when I receive additional information and/or expert report(s), I may modify and/or supplement this report.

VII. Economic Losses Calculation and Assumptions Relied Upon by Dr. Baum

18. Dr. Baum calculated the present value of the economic losses to Mr. Snookal "to range from \$2,714,283 (from the employment termination and the position recission but no promotion to a grade-23 salary) to \$3,477,995 (from the employment termination and the recission of the position in Nigeria with the promotion to a grade-23 salary)."¹⁷

19. For But-For Earnings in the Baum Report (2 Scenarios):

a) In a first scenario in Table 1 of the Baum Report, Dr. Baum "assume[d] Mr. Snookal absent his employment termination is transferred to a position in Nigeria with a location premium of 55 percent by August 1, 2019 (but that he is not then promoted to a grade-23 salary position)."¹⁸ - "Presented in Table 1, the present

¹⁷ Baum Report, ¶21.

¹⁸ Baum Report, ¶28.

value of the economic losses from lost earnings and lost employment benefits for Mr. Snookal is calculated to be \$2,714,283.”¹⁹

- b) In a second scenario, shown in Table 2 of the Baum Report, Dr. Baum “assume[d] Mr. Snookal absent his employment termination is transferred to a position in Nigeria with a location premium of 55 percent by August 1, 2019, and he is then promoted to a grade-23 salary position by January 1, 2020, with Mr. Snookal receiving 85 percent of a 16 percent increase in grade pay. Employment and pension benefits are adjusted accordingly.”²⁰ – “In this second scenario, the present value of the economic losses from lost earnings and employment benefits for Mr. Snookal is calculated to be \$3,477,885.”²¹
- c) In both scenarios, Dr. Baum “use[d] the same methodology and make the same assumptions”²², namely:
- i. Applied “16.75 percent of base pay” as performance incentives for the projection of Chevron but-for performance pay in the but-for.²³
 - ii. “includ[ing] the value of supplemental pay for 25 unused vacation days (multiplied by a factor of 1.4, as per Chevron policy) and the value of tax equalization benefits on the location premium (valued at 13.53 percent of the location premium or 7.44 percent of base pay, according to Chevron’s remuneration report for Mr. Snookal).”²⁴
 - iii. Dr. Baum “project[ed] Mr. Snookal absent his employment termination would have continued receiving employer ESIP contributions equal to 8 percent of earnings.”²⁵

¹⁹ Baum Report, ¶45.

²⁰ Baum Report, ¶46.

²¹ Baum Report, ¶46.

²² Baum Report, ¶46.

²³ Baum Report, ¶14 and ¶28.

²⁴ Baum Report, ¶32 and ¶46.

²⁵ Baum Report, ¶33.

20. For offset earnings in the Baum Report:

- a) “Mr. Snookal’s actual and projected earnings and the value of employment benefits from Chevron (without a transfer to a position in Nigeria) and replacement employment. This equals \$161,243.36 in 2019, \$155,628.57 in 2020, \$179,475 in 2021, \$143,145 in 2022, and \$179,623 in 2023, with Chevron ESIP benefits equal to 8 percent of earnings from Chevron, employer-matching retirement contributions equal to 4 percent of earnings from Nippon Dynawave Packaging Co., and employer-matching retirement contributions equal to 9.5 percent of earnings from Georgia Pacific.”²⁶
- b) The “employer Social Security contributions from all employers equal to 6.2 percent of earnings up to the Social Security wage base”²⁷ have the same values in Tables 1 and 2 of the Baum Report.²⁸
- c) Starting from 2024, Dr. Baum projected Mr. Snookal’s earnings to be “\$180,000 per year (in year-2023 dollars) from Georgia Pacific with a 3 percent bonus”²⁹ and applied a wage growth rate of 3.33% per year.³⁰
- d) From 2019 to 2021 while Mr. Snookal remained employed at Chevron, “Chevron ESIP benefits equal to 8 percent of earnings from Chevron, employer-matching retirement contributions equal to 4 percent of earnings from Nippon Dynawave Packaging Co., and employer-matching retirement contributions equal to 9.5 percent of earnings from Georgia Pacific.”³¹ Dr. Baum “assume[d] Mr. Snookal

²⁶ Baum Report, ¶36.

²⁷ Baum Report, ¶36.

²⁸ Baum Report, Tables 1 and 2 columns [8] and [11], values are the same for every year except for the last year of 2035 where there is a discrepancy between column [8] (but-for) and column 11 (offset).

²⁹ Baum Report, ¶36.

³⁰ Baum Report, ¶30.

³¹ Baum Report, ¶36.

receives comparable medical, dental, and vision insurance benefits from Chevron and replacement employment.”³²

21. For Loss of Pension Benefit (Separate Item in the Baum Report Tables 1 and 2):

- a) In the first scenario, Dr. Baum separately calculated the but-for “lumpsum pension benefit from Chevron upon retirement at the end of his worklife expectancy equal to \$764,191, based on a high average-five earnings of \$263,002 and 25.74 years of service”³³ and an offset “lump-sum pension benefit from Chevron...which equals \$210,227, based on a high average-five earnings of \$151,251 and 12.64 years of service.”³⁴
- b) In the second scenario, the but-for Chevron pension benefit calculated by Dr. Baum is \$868,121 in Table 2, which is a higher amount than that in first scenario because the but-for earnings and performance pay corresponded to a higher pay-grade of 23 (instead of 22) starting in 2020, under Dr. Baum’s assumption of “a promotion to a grade-23 salary after no more than 6 months.”³⁵

22. In both scenarios, Dr. Baum extended the calculation of but-for earnings for Mr.

Snookal to his work-life expectancy in year 2035.³⁶ Dr. Baum applied “employment transition probabilities calculated with Current Population Survey (CPS) data.”³⁷ In other words, Dr. Baum adjusted the earnings and benefits loss by a less than 100% probability that Mr. Snookal would have remained at Chevron in the but-for in the future. This probability is represented in Tables 1 and 2 of the Baum Report, column [13] “Tenure Prob”, and is declining from 97.3% in 2025 to 80.1% in 2035, with every

³² Baum Report, ¶40.

³³ Baum Report, ¶38.

³⁴ Baum Report, ¶39.

³⁵ Baum Report, ¶7.

³⁶ Baum Report, ¶27 “Worklife expectancies are derived from Markov increment-decrement models, which are based on survival probabilities calculated using the U.S. Life Tables.”

³⁷ Baum Report, ¶27.

subsequent year corresponding to a smaller probability of Mr. Snookal remaining at Chevron in the but-for.

VIII. Rebuttal Opinions and Calculations

23. My understanding is that Dr. Baum' calculation was based on the assumption that Plaintiff Mr. Snookal's claims of wrongful constructive termination (among other discrimination claims) would prevail. If Plaintiff does not prevail on this claim, and instead is found to have voluntarily resigned from Chevron, he would not be entitled to any economic loss.

24. I offer the following rebuttal opinions and calculations:

A. But-For duration of the Escravos assignment would not have exceeded four years, therefore Dr. Baum has no basis to extend but-for loss calculation beyond August 1, 2023, four years after Mr. Snookal applied for the REM position.

25. It is my understanding that "Snookal's offer letter [for REM position] explained that the anticipated length of the Escravos assignment was three to four years, but that "special circumstances of a change in business conditions or policies and programs may result in a modification of the assignment or its duration, including elimination of the assignment at the sole discretion of the Company."³⁸ Mr. Snookal understood that there was no guarantee that the Escravos assignment would have been renewed after three to four years.³⁹ Therefore, Dr. Baum has no basis to extend but-for loss calculation beyond August 1, 2023, four years after Mr. Snookal applied for the REM position.⁴⁰

³⁸ Defendant RoG Responses, p6, with emphases added. Mr. Snookal testified that he understood the assignment would only last three to four years. See Snookal Depo 266:9-13.

³⁹ Snookal Depo 271: 13-24.

⁴⁰ Complaint, ¶13 "Chevron offered him the job with a plan to start the new position on August 1, 2019."

26. Furthermore, the person who replaced Mr. Snookal at the Escravos assignment was “kept home and not working from March through June, 2020, due to the lockdown and travel restriction to Nigeria.”⁴¹ Mr. Snookal’s replacement was separated from Chevron in 2020.⁴² Therefore, the but-for Escravos assignment could have ended much sooner than three to four years.

B. Starting from September 2023, Mr. Snookal’s total earnings and benefits (including retirement benefits) at Georgia-Pacific exceeded his but-for Chevron’s total earnings and benefits, therefore Dr. Baum has no basis to extend any loss calculation beyond August 2023.

27. Mr. Snookal is better off with the employment at Georgia-Pacific than he would have been had he remained at Chevron, even using the but-for projected earnings and benefits assumed by Dr. Baum.

- a) Georgia-Pacific’s base pay of \$180,000 exceeded Dr. Baum’s projected Chevron but-for base pay of \$171,203, using Mr. Snookal’s 2019 Chevron base pay of \$141,100⁴³ and growing this amount at the wage growth rate in Baum Report Table 1 column [2] to 2023. Even if the Trier of Fact decides that Mr. Snookal should have expected an increase in salary to grade-23, his but-for full year 2023 base pay of \$187,595 (Exhibit 2, 2023 but-for full-year equivalent in column [3a]), is less than the 2023 offset base pay with the 6.7% locational adjustment which amounted to \$192,926 ($=\$180,000/(1-6.7\%)$) at Georgia-Pacific.
- b) Georgia-Pacific paid Mr. Snookal \$11,000 sign-on bonus, which more than compensated for the approximate one-week employment gap (if any, since Mr. Snookal could have used accrued vacation for the time in between these two

⁴¹ Snookal Depo 274:2-17.

⁴² Snookal Depo 266:14-19.

⁴³ Baum Report, ¶15.

replacement jobs) between his resignation from Nippon Dynawave and first day at Georgia-Pacific. There was no gap in health benefit coverage for Mr. Snookal.

- c) Similar to the but-for Chevron job (as well as to Mr. Snookal's first replacement job at Nippon Dynawave), Mr. Snookal was eligible for performance pay at Georgia-Pacific⁴⁴.
- d) The Escravos assignment would have ended in the but-for by August 2023, therefore there was no basis to include Chevron supplemental vacation pay and Chevron location premium.
- e) Dr. Baum acknowledged that Mr. Snookal receives 9.5% of employer-matching retirement contributions from Georgia-Pacific⁴⁵, which exceeded the 8% but-for Chevron ESIP contribution.⁴⁶
- f) Dr. Baum assumed comparable medical, dental, and vision insurance benefits from Chevron and replacement employment.⁴⁷

28. Because Mr. Snookal is better off with the employment at Georgia-Pacific than he would have been had he remained at Chevron, Dr. Baum has no basis to extend any loss calculation beyond August 2023.

⁴⁴ SNOOKAL-01526-27 Offer of Employment to Mark Snookal on July 7, 2023 from Georgia-Pacific Wauna LLC ("Georgia-Pacific Offer"). Mr. Snookal testified that bonus percentages at Georgia-Pacific ranges between zero and 40 percent, and that he was represented that bonus can range between zero and 100% of base pay every year (Snookal Depo 292:8-12).

⁴⁵ Baum Report, ¶36.

⁴⁶ Baum Report, ¶33. In Table 1 of the Baum Report, Dr. Baum calculated \$17,613 actual retirement benefits (or ESIP contributions) in column [10], which exceeded his calculation of the but-for Chevron ESIP contributions of \$16,172 in column [7]. In Table 2 of the Baum Report, columns [10] actual retirement benefits or ESIP contributions closely match the amounts in column [7] Chevron ESIP contributions.

⁴⁷ Baum Report, ¶40.

C. Dr. Baum has not disclosed how he calculated pension losses. Pension loss amounts in Tables 1 and 2 of the Baum Report are grossly overestimated.

29. Dr. Baum has not produced his calculation of pension losses for Mr. Snookal.⁴⁸ It appears that Dr. Baum's calculation of Mr. Snookal's pension losses did not incorporate "employment transition probabilities"⁴⁹ which Dr. Baum used to adjust loss by the declining probability of Mr. Snookal remaining at Chevron in each subsequent future year. For example, Dr. Baum assigned a probability of 80.1% that conditional on Mr. Snookal remaining employed at Chevron in the But-For, he would continue to work at Chevron, and would never change job, through worklife expectancy in 2035. I do not see anywhere in the Baum Report that he applied the 80.1% tenure probability to the adjusted loss for pensions. Furthermore, using Dr. Baum's method in Tables 1 and 2, Dr. Baum would have to apply the tenure probabilities to the adjusted loss for each year in the future, which he did not appear to have done.

30. In any event, as explained previously, there is no pension loss starting in August 2023. Pension loss, if any, would only be transitory and pertaining to the marginal impact of the three to four years of elevated pay from additional vacation pay and location premium for being in a foreign country. Therefore, the adjusted loss of pensions of \$581,492 in Table 1 and \$694,124 in Table 2 of the Baum Report are grossly overestimated.

D. I find other calculation errors in the Baum Report which inflate economic losses.

31. I have identified the following errors in the Baum Report which inflate his calculation of economic losses for Mr. Snookal. I enumerate these errors below:

⁴⁸ Columns [14] and [15], year 2035, Tables 1 and 2 of the Baum Report.

⁴⁹ Baum Report, ¶27.

- a) According to Chevron's Rotational Expatriate Assignments⁵⁰, "The location premium is a fixed percentage of base salary up to an annual base salary maximum and is tax-protected through the tax equalization process."⁵¹ However, instead of applying the fixed percentage to base salary in the but-for, Dr. Baum applied to base plus performance pay in his Tables 1 and 2. This correction impacts column [4] Chevron supplemental vacation pay in Dr. Baum's calculation and column [6] Chevron tax equalization benefit as well.
- b) Mr. Snookal moved to Vancouver, Washington for the replacement position at Nippon Dynawave in around August/September, 2021.⁵² Mr. Snookal remained in the same address in Vancouver, WA for his second (presumably current) replacement position at Georgia-Pacific, based on his earnings statements with Georgia-Pacific and based on his deposition testimony.⁵³ According to my research (**Rebuttal Exhibit 3**), the cost of living is 13.3% cheaper in Vancouver, WA compared to Los Angeles, California.⁵⁴ The same dollar amount of salary in Vancouver, WA would have to be adjusted by a locational salary differential of 6.7% in order to make the salary figure apples-to-apples in comparison with that in El Segundo, CA.⁵⁵ Dr. Baum has not adjusted for the salary differential between the but-for projection for a position at Chevron in El Segundo, CA, and the offset positions in Vancouver, WA. Therefore, the amounts between but-for and actual pay in Baum Report Tables 1 and 2 do not represent an apples-to-apples comparison.

⁵⁰ CUSA000521-537.

⁵¹ CUSA000530, with bold and emphasis added.

⁵² NDP-SDT_000001-3. Mr. Snookal's start date at Nippon Dynawave was September 6, 2021. See Snookal Depo 276:2-10,

⁵³ Snookal Depo 56:3-4.

⁵⁴ Mr. Snookal's 2019 and 2020 W2s show an address in Los Angeles, CA with zip code 90065 (SNOOKAL-01566-7).

⁵⁵ www.salary.com/research/cost-of-living/compare/los-angeles-ca/vancouver-wa

E. Rebuttal Economic Losses Calculation

32. **Rebuttal Exhibits 1-2** represent my rebuttal calculations, after incorporating all the rebuttal opinions stated above. Assuming that the Trier of Fact finds for Mr.

Snookal's claims:

- a) Mr. Snookal's maximum adjusted earnings loss (excluding pension) ranges between \$470,936 (assuming he would have remained in grade 22) and \$603,247 (assuming he would have moved up to grade 23 after six months). This range is conservative because the anticipated length of the Escravos assignment could have lasted less than four years. For example, if the assignment lasted until the end of 2021, Mr. Snookal's economic losses (excluding pension), would range between \$234,280 and \$304,083.
- b) Mr. Snookal's maximum pension loss ranges between \$49,360 (assuming he would have remained in grade 22) and \$62,258 (assuming he would have moved up to grade 23 after six months). Again, this range is conservative because the anticipated length of the Escravos assignment could have lasted less than four years, resulting in smaller pension losses.

33. I may supplement this report upon receiving additional information and/or additional expert report(s) from the Plaintiff.

Executed on Tuesday, September 3rd, 2024 in Los Angeles, California

Chen Song

09/03/2024

Chen Song, Ph.D.

Date

Snookal v. Chevron USA, Inc.

Exhibit 1 - Dr. Song's Rebuttal to Baum Report Table 1

Year	But-For Annual Earnings									Offset Annual Earnings			Economic Losses					
	Wage Growth Rate	Chevron Earnings and Performance Pay	Chevron Base Earnings	Chevron Performance Pay ^[i]	Chevron Supplemental Vacation Pay	Chevron Location Premiums	Chevron Tax Equalization Benefit on Location Premium ^[ii]	Chevron ESIP Contributions	Chevron Employer Social Security Contributions	Actual Earnings, Performance Pay, and Bonuses	Actual Retirement Benefits (or ESIP Contributions)	Actual Employer Social Security Contributions	Loss ^[iii]	Tenure Prob.	Chevron Pension Benefits	Actual Chevron Pension Benefits	Adjusted Loss	Adjusted Loss Cumulative Value
[1]	[2]	[3]	[3a]: 2019 Base Pay from Baum Report Paragraph 15, Subsequent Years Growing at Column [2] Wage Growth Rate	[3b] = [3]-[3a]	[4] = [3a]/365*25*1.4 [Per Snookal-01298]	[5] = [3a]*0.55 [Per Snookal-00777]	[6] = [5]*13.53%	[7] = [3]*0.08	[8]: Column [8] of Table 1 in Baum Report, Adjusted for Partial Year	[9]: Column [9] of Table 1 in Baum Report, Adjusted for Partial Year	[10]: Column [10] of Table 1 in Baum Report, Adjusted for Partial Year	[11]: Column [11] of Table 1 in Baum Report, Adjusted for Partial Year	[12] = Max(SUM([3a] to [8]) - SUM([9] to [11]), 0) up till 8/31/2021 [12] = Max(SUM([3a] to [8]) - SUM([9] to [11])/(1-6.7% cost of living adjustment), 0) starting from 9/1/2021	[13]	[14]	[15]	[16] = MAX([12] x [13]+[14]-[15], 0) pro-rate 2019 to start on 8/1/2019 when Mr. Snookal applied for the REM position	[17] Cumulative
8/1/2019-12/31/2019 ^[vi]	3.22	\$67,185	\$58,792	\$8,393	\$5,638	\$13,473	\$1,823	\$5,375	\$3,433	\$67,185	\$5,375	\$3,433	\$20,934	1	0	0	\$20,934	\$20,934
2020	3.82	\$155,629	\$146,490	\$9,139	\$14,047	\$80,570	\$10,901	\$12,450	\$8,537	\$155,629	\$12,450	\$8,537	\$105,518	1	0	0	\$105,518	\$126,452
1/1/2021-8/31/2021	6.2	\$118,521	\$103,715	\$14,806	\$9,945	\$57,043	\$7,718	\$9,482	\$5,903	\$119,650	\$7,977	\$5,903	\$75,082	1	0	0	\$75,082	\$201,534
9/1/2021-12/31/2021 ^[v]		\$59,260	\$51,857	\$7,403	\$4,973	\$28,522	\$3,859	\$4,741	\$2,951	\$59,825	\$3,988	\$2,951	\$32,747	1	0	0	\$32,747	\$234,280
2022	5.47	\$187,509	\$164,082	\$23,427	\$15,734	\$90,245	\$12,210	\$15,001	\$9,114	\$143,145	\$5,726	\$8,875	\$160,739	1	0	0	\$160,739	\$395,019
1/1/2023-7/31/2023 ^[vii]	4.34	\$114,123	\$99,869	\$14,254	\$9,576	\$54,928	\$7,432	\$9,130	\$5,794	\$104,780	\$6,112	\$5,794	\$75,917	1	0	0	\$75,917	\$470,936

Pension Benefits Through July 31, 2023 \$269,255 \$219,895 \$49,360

Notes:

- [i] Mr. Snookal received performance incentives amounting to 16.75% of his base salary in 2018 (See Baum Report, paragraph 14).
 [ii] The tax equalization benefits for Mr. Snookal's location premium were valued at 13.53% of the location premium, equating to 7.44% of his base salary (See Baum Report, paragraph 32).
 [iii] The estimated salary reduction for relocating from Los Angeles, CA, to Vancouver, WA, is 6.7% (Source: Salary.com).
 [vi] Chevron offered Mr. Snookal the job with a planned start date of August 1, 2019 (See Snookal Complaint, paragraph 13).
 [v] On August 3, 2021, Mr. Snookal secured a mitigation position at Dynawave, starting in September 2021, which required him to relocate from Los Angeles, CA, to Vancouver, WA (See NDP-SDT_000001.pdf).
 [vii] It is my understanding that "Snookal's offer letter [for REM position] explained that the anticipated length of the Escravos assignment was three to four years, but that "special circumstances of a change in business conditions or policies and programs may result in a modification of the assignment or its duration, including elimination of the assignment at the sole discretion of the Company." (See Defendant Chevron USA, Inc.'s Responses to Plaintiff Mark Snookal's Special Interrogatories (Set 2), August 13, 2024, p. 6).

Snookal v. Chevron USA, Inc.

Dr. Song's Rebuttal to Baum Report Table 1**Detailed Partial Year Calculations for Total Earnings in Column [3] of Dr. Song's Exhibit 1**

Start Date	End Date	Number of Months	Chevron Earnings and Performance Pay from column [3] of Table 1 in Baum Report	Calculated Chevron Earnings and Performance Pay for Partial Year
[1]	[2]	[3] = [2]-[1]	[4]	[5] = [4]*[3]/12
8/1/2019 ^[1]	12/31/2019	5	\$161,243	\$67,185
1/1/2020	12/31/2020	12	\$155,629	\$155,629
1/1/2021	8/31/2021	8	\$177,781	\$118,521
9/1/2021 ^[2]	12/31/2021	4	\$177,781	\$59,260
1/1/2022	12/31/2022	12	\$187,509	\$187,509
1/1/2023	7/31/2023 ^[3]	7	\$195,639	\$114,123

Notes:

[1] Chevron offered Mr. Snookal the job with a planned start date of August 1, 2019 (See Snookal Complaint, paragraph 13).

[2] On August 3, 2021, Mr. Snookal secured a mitigation position at Dynawave, starting in September 2021, which required him to relocate from Los Angeles, CA, to Vancouver, WA (See NDP-SDT_000001.pdf).

[3] It is my understanding that “Snookal’s offer letter [for REM position] explained that the anticipated length of the Escravos assignment was three to four years, but that “special circumstances of a change in business conditions or policies and programs may result in a modification of the assignment or its duration, including elimination of the assignment at the sole discretion of the Company.” (See Defendant Chevron USA, Inc.’s Responses to Plaintiff Mark Snookal’s Special Interrogatories (Set 2), August 13, 2024, p. 6).

Snookal v. Chevron USA, Inc.

Dr. Song's Rebuttal to Baum Report Table 1

Detailed Loss Calculations After Mr. Snookal Moved to Vancouver, WA, Applying a Cost of Living Adjustment

Year	Total But-For Earnings	Total Offset Earnings	Total Offset Earnings after Cost of Living Adjustment	Loss
[1]	[2] = SUM[3a] to [8] in Exhibit1	[3] = SUM[9] to [11] in Exhibit1	[4] = SUM([9] to [11])/(1-6.7% cost of living adjustment)	[5] = [2] - [4]
9/1/2021-12/31/2021	\$104,306	\$66,765	\$71,559	\$32,747
2022	\$329,813	\$157,746	\$169,074	\$160,739
1/1/2023-7/31/2023	\$200,982	\$116,686	\$125,065	\$75,917

Note:

See Dr. Song's Exhibit 1

EX 154-022

Trial Exhibit 154
p. 403

Snookal v. Chevron USA, Inc.

Exhibit 1 - Dr. Song's Rebuttal to Baum Report Table 1 Pension Calculations

Year	Chevron Earnings and Performance Pay ^[1]	But-For Chevron Years of Service from Hire Date 1/12/2009 to Maximum Years of Escravos Assignment End Date 8/1/2023	Offset Chevron Years of Services from Hire Date 1/12/2009 to Date Mr. Snookal Quit 8/20/2021
2018	\$158,900		
2019	\$161,243	1/12/2009	1/12/2009
2020	\$155,629	8/1/2023	8/20/2021
2021	\$177,781	14.55	12.61
2022	\$187,509		

Description ^[2]	Formula	But-For Pension Calculation	Offset Pension Calculation
Average of highest 5 year earnings <= 60 years age ^[3]	[A]	\$168,212	\$158,591
Percentage of highest 5 year earnings <= 60 years age	[B]	11%	11%
Number of Years of Service <= 60 years age ^[4]	[C]	14.55	12.61
Average of highest 5 year earnings > 60 years age ^[5]	[D]	N/A	N/A
Percentage of highest 5 year earnings > 60 years age	[E]	14%	14%
Number of Years of Service > 60 years age	[F]	0	0
Total Pension	[G] = [A] x [B] x [C]	\$269,255	\$219,895

Notes:

[1] See Baum Report, Table 1 column [3] for 2019-2021 earnings. See Baum Report, para 14 for 2018 earnings.

[2] My analysis adopts Dr. Baum's pension calculation. Mr. Snookal's pension benefits through Chevron would have equaled 11 percent of highest average-five earnings multiplied by years of service up to age 60 plus 14 percent of highest average-five earnings multiplied by years of service beyond age 60 as a lump sum with retirement between the ages of 60 and 65. See Baum Report, para 17.

[3] My analysis uses an average of 2019-2022 earnings for the But-For Chevron Earnings and Performance Pay and an average of 2019-2020 earnings for Offset Chevron Earnings and Performance Pay. The analysis can be amended to include early years if additional pay records are provided.

[4] Mr. Snookal was hired by Chevron on January 12, 2009. See Baum Report, para 6. In September 2021, he started a new job at Nippon Dynawave that required him to relocate to Vancouver, WA from Los Angeles, CA. See NDP-SDT_000001.pdf

[5] Mr. Baum was born on July 24, 1972. He would not have turned 60 until 2032. See Baum Report, para 5.

Snookal v. Chevron USA, Inc.

Exhibit 2 - Dr. Song's Rebuttal to Baum Report Table 2

Year	But-For Annual Earnings									Offset Annual Earnings			Economic Losses					
	Wage Growth Rate	Chevron Earnings and Performance Pay	Chevron Base Earnings	Chevron Performance Pay ^[i]	Chevron Supplemental Vacation Pay	Chevron Location Premiums	Chevron Tax Equalization Benefit on Location Premium ^[ii]	Chevron ESIP Contributions	Chevron Employer Social Security Contributions	Actual Earnings, Performance Pay, and Bonuses	Actual Retirement Benefits (or ESIP Contributions)	Actual Employer Social Security Contributions	Loss ^[iii]	Tenure Prob.	Chevron Pension Benefits	Actual Chevron Pension Benefits	Adjusted Loss	Adjusted Loss Cumulative Value
[1]	[2]	[3]	[3a]: 2019 Base Pay from Baum Report Paragraph 15, Subsequent Years Growing at Column [2] Wage Growth Rate ^[vii]	[3b] = [3]-[3a]	[4] = [3a]/365*25*1.4 [Per Snookal-01298]	[5] = [3a]*0.55 [Per Snookal-00777]	[6] = [5]*13.53%	[7] = [3]*0.08	[8]: Column [8] of Table 2 in Baum Report, Adjusted for Partial Year	[9]: Column [9] of Table 2 in Baum Report, Adjusted for Partial Year	[10]: Column [10] of Table 2 in Baum Report, Adjusted for Partial Year	[11]: Column [11] of Table 2 in Baum Report, Adjusted for Partial Year	[12] = Max(SUM([3a] to [8]) - SUM([9] to [11]), 0) up till 8/31/2021 [12] = Max(SUM([3a] to [8]) - SUM([9] to [11]))/(1-6.7% cost of living adjustment), 0) starting from 9/1/2021	[13]	[14]	[15]	[16] = MAX([12] x [13]+[14]-[15], 0) pro-rate 2019 to start on 8/1/2019 when Mr. Snookal applied for the REM position	[17] Cumulative
8/1/2019-12/31/2019 ^[vi]	3.22	\$67,185	\$58,792	\$8,393	\$5,638	\$13,473	\$1,823	\$5,375	\$3,433	\$67,185	\$5,375	\$3,433	\$20,934	1	0	0	\$20,934	\$20,934
2020	3.82	\$176,795	\$160,515	\$16,280	\$15,392	\$88,283	\$11,945	\$14,144	\$8,537	\$155,629	\$12,450	\$8,537	\$138,480	1	0	0	\$138,480	\$159,413
1/1/2021-8/31/2021	6.2	\$134,639	\$113,645	\$20,994	\$10,897	\$62,505	\$8,457	\$10,771	\$5,903	\$119,650	\$7,977	\$5,903	\$99,643	1	0	0	\$99,643	\$259,056
9/1/2021-12/31/2021 ^[vi]		\$67,320	\$56,822	\$10,497	\$5,449	\$31,252	\$4,228	\$5,386	\$2,951	\$59,825	\$3,988	\$2,951	\$45,027	1	0	0	\$45,027	\$304,083
2022	5.47	\$213,011	\$179,792	\$33,219	\$17,240	\$98,886	\$13,379	\$17,041	\$9,114	\$143,145	\$5,726	\$8,875	\$199,597	1	0	0	\$199,597	\$503,680
1/1/2023-7/31/2023 ^[vi]	4.34	\$129,644	\$109,430	\$20,213	\$10,493	\$60,187	\$8,143	\$10,371	\$5,794	\$104,780	\$6,112	\$5,794	\$99,567	1	0	0	\$99,567	\$603,247
Pension Benefits Through July 31, 2023														\$291,935	\$229,678	\$62,258		

Notes:
[i] Mr. Snookal received performance incentives amounting to 16.75% of his base salary in 2018 (See Baum Report, paragraph 14).
[ii] The tax equalization benefits for Mr. Snookal's location premium were valued at 13.53% of the location premium, equating to 7.44% of his base salary (See Baum Report, paragraph 32).
[iii] The estimated salary reduction for relocating from Los Angeles, CA, to Vancouver, WA, is 6.7% (Source: Salary.com).
[iv] Chevron offered Mr. Snookal the job with a planned start date of August 1, 2019 (See Snookal Complaint, paragraph 13).
[v] On August 3, 2021, Mr. Snookal secured a mitigation position at Dynawave, starting in September 2021, which required him to relocate from Los Angeles, CA, to Vancouver, WA (See NDP-SDT_000001.pdf).
[vi] It is my understanding that "Snookal's offer letter [for REM position] explained that the anticipated length of the Escravos assignment was three to four years, but that "special circumstances of a change in business conditions or policies and programs may result in a modification of the assignment or its duration, including elimination of the assignment at the sole discretion of the Company." (See Defendant Chevron USA, Inc.'s Responses to Plaintiff Mark Snookal's Special Interrogatories (Set 2), August 13, 2024, p. 6).
[vii] It is my understanding that Mr. Snookal "is then promoted to a grade-23 salary position by January 1, 2020, with Mr. Snookal receiving 85 percent of a 16 percent increase in grade pay." (See Baum Report, paragraph 46).

EX 154-024

Trial Exhibit 154
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Snookal v. Chevron USA, Inc.

Dr. Song's Rebuttal to Baum Report Table 2
Detailed Partial Year Calculations for Total Earnings in Column [3] of Dr. Song's Exhibit 2

Start Date	End Date	Number of Months	Chevron Earnings and Performance Pay from column [3] of Table 2 in Baum Report	Calculated Chevron Earnings and Performance Pay for Partial Year
[1]	[2]	[3] = [2]-[1]	[4]	[5] = [4]*[3]/12
8/1/2019 ^[1]	12/31/2019	5	\$161,243	\$67,185
1/1/2020	12/31/2020	12	\$176,795	\$176,795
1/1/2021	8/31/2021	8	\$201,959	\$134,639
9/1/2021 ^[2]	12/31/2021	4	\$201,959	\$67,320
1/1/2022	12/31/2022	12	\$213,011	\$213,011
1/1/2023	7/31/2023 ^[3]	7	\$222,246	\$129,644

Notes:

[1] Chevron offered Mr. Snookal the job with a planned start date of August 1, 2019 (See Snookal Complaint, paragraph 13).

[2] On August 3, 2021, Mr. Snookal secured a mitigation position at Dynawave, starting in September 2021, which required him to relocate from Los Angeles, CA, to Vancouver, WA (See NDP-SDT_000001.pdf).

[3] It is my understanding that “Snookal’s offer letter [for REM position] explained that the anticipated length of the Escravos assignment was three to four years, but that “special circumstances of a change in business conditions or policies and programs may result in a modification of the assignment or its duration, including elimination of the assignment at the sole discretion of the Company.” (See Defendant Chevron USA, Inc.’s Responses to Plaintiff Mark Snookal’s Special Interrogatories (Set 2), August 13, 2024, p. 6).

EX 154-025

Trial Exhibit 154
p. 406

Snookal v. Chevron USA, Inc.

Dr. Song's Rebuttal to Baum Report Table 2

Detailed Loss Calculations After Mr. Snookal Moved to Vancouver, WA, Applying a Cost of Living Adjustment

Year	Total But-For Earnings	Total Offset Earnings	Total Offset Earnings after Cost of Living Adjustment	Loss
[1]	[2] = SUM[3a] to [8] in Exhibit2	[3] = SUM[9] to [11] in Exhibit2	[4] = SUM([9] to [11])/(1-6.7% cost of living adjustment)	[5] = [2] - [4]
9/1/2021-12/31/2021	\$116,586	\$66,765	\$71,559	\$45,027
2022	\$368,671	\$157,746	\$169,074	\$199,597
1/1/2023-7/31/2023	\$224,632	\$116,686	\$125,065	\$99,567

Note:

See Dr. Song's Exhibit 2

EX 154-026

Trial Exhibit 154
p. 407

Snookal v. Chevron USA, Inc.

Exhibit 2 - Dr. Song's Rebuttal to Baum Report Table 2 Pension Calculations

Year	Chevron Earnings and Performance Pay ^[1]	But-For Chevron Years of Service from Hire Date 1/12/2009 to Maximum Years of Escravos Assignment End Date 8/1/2023	Offset Chevron Years of Services from Hire Date 1/12/2009 to Date Mr. Snookal Quit 8/20/2021
2018	\$158,900		
2019	\$161,243	1/12/2009	1/12/2009
2020	\$176,795	8/1/2023	8/20/2021
2021	\$201,959	14.55	12.61
2022	\$213,011		

Description ^[2]	Formula	But-For Pension Calculation	Offset Pension Calculation
Average of highest 5 year earnings <= 60 years age ^[3]	[A] But For = Average 2018-2022, Offset = Average 2018-2020	\$182,382	\$165,646
Percentage of highest 5 year earnings <= 60 years age	[B]	11%	11%
Number of Years of Service <= 60 years age ^[4]	[C]	14.55	12.61
Average of highest 5 year earnings > 60 years age ^[5]	[D]	N/A	N/A
Percentage of highest 5 year earnings > 60 years age	[E]	14%	14%
Number of Years of Service > 60 years age	[F]	0	0
Total Pension	[G] = [A] x [B] x [C]	\$291,935	\$229,678

Notes:

[1] See Baum Report, Table 2 column [3] for 2019-2021 earnings. See Baum Report, para 14 for 2018 earnings.

[2] My analysis adopts Dr. Baum's pension calculation. Mr. Snookal's pension benefits through Chevron would have equaled 11 percent of highest average-five earnings multiplied by years of service up to age 60 plus 14 percent of highest average-five earnings multiplied by years of service beyond age 60 as a lump sum with retirement between the ages of 60 and 65. See Baum Report, para 17.

[3] My analysis uses an average of 2018-2022 earnings for the But-For Chevron Earnings and Performance Pay and an average of 2018-2020 earnings for Offset Chevron Earnings and Performance Pay. The analysis can be amended to include early years if additional pay records are provided.

[4] Mr. Snookal was hired by Chevron on January 12, 2009. See Baum Report, para 6. In September 2021, he started a new job at Nippon Dynawave that required him to relocate to Vancouver, WA from Los Angeles, CA. See NDP-SDT_000001.pdf

[5] Mr. Baum was born on July 24, 1972. He would not have turned 60 until 2032. See Baum Report, para 5.

EX 154-027

Trial Exhibit 154
p. 408

Snookal v. Chevron USA, Inc.

Exhibit 3

The same dollar amount of salary in Vancouver, WA would have to be adjusted by a locational salary differential of 6.7% in order to make the salary figure comparable to that in El Segundo, CA

Moving to **Vancouver, WA** from Los Angeles, CA with a salary of \$177,781

Thinking about moving to another city? Here are two important questions and the numbers to you will need to answer those questions:

How much more or less will it cost to live in the new city?

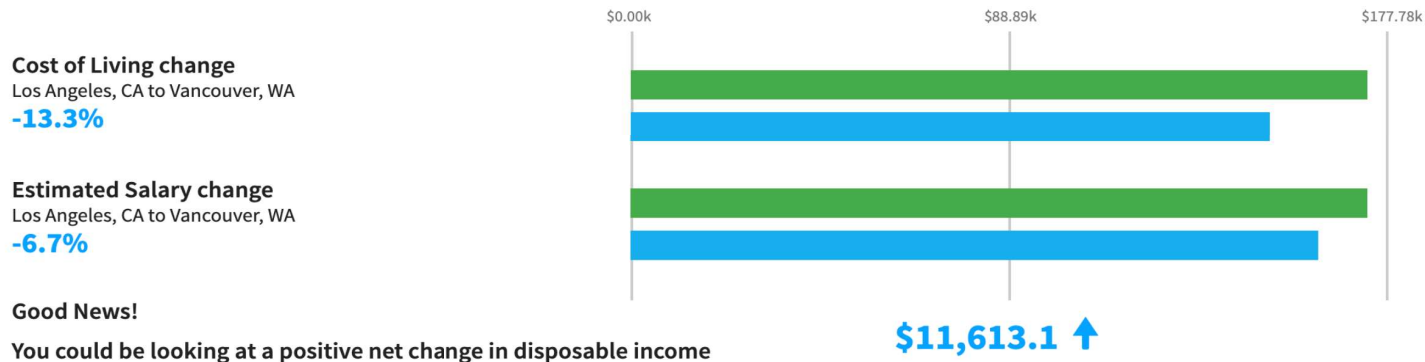
Look at the percentage difference between the cost of living where you live now, and the cost of living in the new location.

How much more or less will pay for the same or similar job be in the new city?

Look at the percentage increase or reduction in your salary that you could expect if you were to move to that new location

Using these numbers, we calculated the net change in annual disposable income that a move to the new city will have on your wallet and lifestyle.

[View Minimum Wage Values in Los Angeles and Vancouver Compared with the Cost of Living](#) ➔

**Source:**

<https://www.salary.com/research/cost-of-living/compare/los-angeles-ca/vancouver-wa>

Attachment A**CHEN SONG, Ph.D., CFA**

Cirque Analytics
Jackson Hole, WY; Washington, D.C.; Los Angeles, CA; Irvine, CA
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(310) 691-4476 chen.song@CirqueAnalytics.com

Dr. Song is an economist, CFA charter holder, and expert witness. Since receiving her Ph.D. in economics from the University of Chicago, she has provided consulting and expert testimony in single-plaintiff, multiple-plaintiff, and class action discrimination disputes. Dr. Song has studied labor market definition and has applied techniques in statistics and econometrics to examine companies' employment practices: hiring, pay, promotion, termination, reduction in force, executive compensation, and pension benefits. Additionally, she has conducted pay equity studies to assist companies with identifying potential gender or minority pay gaps. Dr. Song routinely works with large databases and various types of HR, time reporting, and large-scale transactional databases to help counsel with wage and hour class actions concerning unpaid wages, meal and rest break violations, and employee misclassification. In California wage and hour class actions, she has applied data and statistical analyses to study issues related to class certification, and to calculate potential exposure to assist with mediation.

Dr. Song has been qualified as an expert witness in both Federal and State Courts, and has testified at arbitration and at trial. For over four years, Dr. Song was appointed by the United States District Court as a neutral Technical Advisor, to assist the Court and the Special Master with a complex employment class action, which resulted in a successful settlement that ended more than a decade of litigation.

Dr. Song's statistical and econometric expertise, which she frequently applies to study issues related to class certification and economic damages, includes applying econometric modeling tools, such as conducting statistical tests, performing regression analysis, and drawing statistical inferences based on robust empirical data analyses. Dr. Song's expertise in data analysis focuses on studying the statistical properties of data, making projections, statistical sampling, and the extrapolation of sample estimates to the population. Related to survey data analysis, Dr. Song has offered rebuttal opinions on a proposed choice-based conjoint (CBC) survey in a consumer class action.

Other areas of Dr. Song's expertise include applying complex financial modeling tools, for example stock option valuation, Monte Carlo simulation, event-study, and stress testing in connection with alleged trade secrets misappropriation, accounting fraud, and breach of contract damages calculations.

Dr. Song maintains a strong affiliation with the academic community. She taught courses on labor economics at the University of California, Irvine, and on financial institutions at California State University, Los Angeles. She currently teaches review courses on risk management for the Chartered Financial Analyst (CFA) program.

Jackson Hole, WY

Irvine, CA

Los Angeles, CA

Washington, DC

CUSA0002654



EDUCATION

Ph.D. (Economics) (2000), University of Chicago
M.A. (Economics) (1995), University of Chicago
B.A. (Mathematics and Economics) (1993), Agnes Scott College

PROFESSIONAL EXPERIENCE

2021 April Senior Vice President of Cirque Analytics
2011 - 2021 Nathan Associates, Inc.
Senior Vice President: 2016 - 2021 April
Vice President: 2013 - 2016
Principal Economist: 2011 - 2013
2006 - 2010 Navigant Consulting, Inc.
Director: 2008 - 2010
Associate Director: 2006 - 2008
2000 - 2005 Resolution Economics, LLC
Senior Economist: 2003 - 2005
Economist: 2000 - 2003
2008 - 2021 Instructor, CFALA Review Program, Level III Risk Management
2007 - 2008 Adjunct Assistant Professor, California State University, Los Angeles
2000 - 2006 Senior Investigator, Center for Population Economics, University of Chicago
2004 Fall Lecturer, University of California Irvine
1992 - 1993 Intern, Federal Reserve Bank of Atlanta

EXPERT REPORTS, TESTIMONY, DECLARATIONS AND PROCEEDINGS (2019 May – Current)

- *Indradevi Sabrina Joseph v. Xilinx, Inc.*, Case No. 21CV385612, related to pay equity evaluation and rebuttal damages analysis in connection with gender discrimination and retaliation claims. Deposition testimony provided on August 30, 2024.
- *Keith Huckaby, et al., v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 2:21-cv-07766-ODW-PD, related to rebuttal damages analysis in a wage and hour class action. Rebuttal expert report filed on May 1, 2023. Supplemental rebuttal report filed on November 6, 2023. Deposition testimony provided on July 25, 2024.
- *Georgina Puglisi v. Hillstone Restaurant Group, Inc.*, Case No. 30-2020-01154149-CU-WT-CJC, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on June 25, 2024.
- *Barry Broome, et al., v. CRST Malone, Inc.*, Case No. 2:19-cv-01917-MHH, related to rebuttal damages analysis in an FLSA Collective action. Rebuttal expert report co-authored with Eric Matolo filed on June 3, 2024.
- *Codie Rael v. Sybron Dental Specialties, Inc., et al.*, Case No. BC584994, related to workforce and economic loss analyses for age discrimination and constructive termination claims. Deposition testimony provided on April 24, 2024.

Jackson Hole, WY

Irvine, CA

Los Angeles, CA

Washington, DC

CUSA0002655



- *Anthony Cervantes and Mike Cross, individually and on behalf of all other persons similarly situated, v. CRST International, Inc., and CRST Expedited, Inc.*, Case No. 20-cv-0075-CJW-KEM, related to rebuttal damages analysis in an FLSA Collective and Rule 23 Class Action. Rebuttal expert report filed on December 8, 2023. Deposition testimony provided on January 10, 2024.
- *Berta Sosa v. Comerica Bank, et al.*, Case No. YC071851, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on August 2, 2019. Trial testimony provided on November 8, 2023.
- *Wade Pyun, Complainant, vs. U.S. Bank National Association, Respondent*, OALJ Case No. 2020-SOX-00023 & OSHA Case No. 9-3290-18-660, related to loss of earnings calculation. Expert report filed on March 9, 2023. Trial testimony provided on September 28 and 29, 2023.
- *The State of California, ex rel. Gregory Duncan and Gary Hulbert, v. Sutter Health, et al.*, Case No. RG17846895, related to statistical sampling in connection with fraudulent medical billing claims. Declarations filed on October 10, 2022, October 21, 2022, December 19, 2022, April 13, 2023, and April 24, 2023. Expert report filed on June 20, 2023. Deposition testimony provided on July 26, 2023.
- *Angel Lujan v. Dover Pump Solutions Group, et al.*, Case No. 20STCV09522, related to economic loss calculation for a wrongful termination claim. Deposition testimony provided on July 18, 2023.
- *Michael Cash v. County of Los Angeles*, Case No. BC718190, related to rebuttal damages calculation under California Fair Employment and Housing Act (FEHA) claims. Deposition testimony provided on June 10, 2021. Trial testimony provided on June 13, 2023.
- *Male Excel Medical, P.A., and Male Excel, Inc. v. Signia Marketing, LTD.*, Case No. A-20-816167-C, related to damages calculations in connection with allegations of fraud. Expert report filed on December 17, 2021. Trial testimony provided on May 30, 2023.
- *Maria Martinez v. Pharmavite, LLC*, Case No. BC671153, related to loss of earnings calculation for a wrongful termination claim. Deposition testimony provided on January 8, 2021. Updated rebuttal analysis provided on February 21, 2023. Trial testimony provided on March 28, 2023.
- *Michele Lewana Evans and Melody Sprouse, et al., v. Downtown Women's Center*, Case No. 22STCV06578, related to data analysis in a wage and hour class action. Rebuttal expert declaration filed on March 20, 2023.
- *Maria Torres v. Southern California Permanente Medical Group, Kaiser Foundation Health Plan, Inc., and Kaiser Foundation Hospitals*, Case No. 19STCV42476, related to rebuttal damages calculation under disability discrimination claims. Rebuttal expert report filed on November 10, 2022.
- *Eric Pierce v. County of Los Angeles, et al.*, Case No. BC675062, related to rebuttal damages calculation under race discrimination claims. Deposition testimony provided on November 1, 2022.
- *Truinject Corp. v. Galderma, S.A., Galderma Laboratories, L.P., Nestlé Skin Health, Inc.*, Case No. 19-00592-VAC-JLH, providing rebuttal opinions to expert survey analysis in connection with allegations of breach of contract, patent infringement, and trade secret misappropriation claims. Rebuttal expert report co-authored with Nancy Mathiowetz, Ph.D., and filed on September 14, 2022.



- *Judy Garcia, Fidel Barrios, and Elyse Allahar, individually, and on behalf of all others similarly situated, v. Cardinal Health, Inc., and Cardinal Health 200, LLC*, Case No. 37-2019-00068269-CU-OE-CTL, related to data analysis in a wage and hour class action. Expert declaration filed on September 8, 2022.
- *Arthur J. Gallagher & Co., v. Tarantino, et al.*, Case No. 20-cv-05505-EMC, providing rebuttal financial analysis in connection with allegations of breach of contract and misappropriation of trade secrets. Rebuttal expert report filed on April 28, 2022. Deposition testimony provided on August 3, 2022.
- *William M. Dorfman, D.D.S., dba Century City Aesthetic Dentistry v. Patti Cantor, Michael Kosdon, D.D.S., dba Kosdon Cosmetic Dentistry*, Case No. BC602388, related to trade secrets misappropriation and breach of contract claims. Deposition testimonies provided on March 6, 2020 and on April 16, 2022. Trial testimony provided on May 10, 2022 and June 1st, 2022.
- *Margarita Ramirez v. World Oil Corp.*, Case No. 20STCV22351, related to rebuttal damages calculation under disability discrimination claims. Deposition testimony provided on January 24, 2022. Trial testimony provided on April 18 and April 19, 2022.
- *Jeremy Gilmore, et al., v. Vansh, Inc. et al.*, Case No. HG18930348, related to data analysis in a wage and hour class action. Expert declaration filed on December 6, 2021.
- *United States, v. Nancy Zak, Claud Clark III, EcoVest Capital, Inc., Alan N. Solon, Robert M. McCullough, and Ralph R. Teal Jr.*, Case No. 1:18-cv-05774-AT, providing rebuttal financial analysis in connection with allegations of violations of the internal revenue laws related to the donation of conservation easements and deductions claimed related to those easements. Rebuttal expert report filed on November 10, 2021. Deposition testimony provided on January 13, 2022.
- *Jennifer Garcia, et al., v. Central Coast Restaurants, Inc. et al.*, Case No. 3:18-cv-02370-RS, related to data analysis in a wage and hour class action. Rebuttal expert report filed on October 29, 2021.
- *Monica Barnett v. Costco Wholesale Corporation*, Case No. 2:20-cv-04896-ODW-JEMx, related to rebuttal damages calculation in discrimination claims. Rebuttal expert report filed on October 4, 2021.
- *Lauryn Latravia Vargas v. Kaiser Foundation Health Plan, Inc.*, Case No. RIC1906237, related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 28, 2021. Trial testimony provided September 8, 2021.
- *Department of Fair Employment and Housing (DFEH) v. Pathways Community Services, LLC, and Pathways Health and Community Support, LLC*, Case No. 30-2018-01039657-CU-CRCJC), related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 16, 2021.
- *In RE: MacBook Keyboard Litigation*, Case No. 5:18-cv-02813-EJD-VKD, related to rebuttal opinions on proposed choice-based conjoint and repair rate analyses. Rebuttal expert report filed on May 13, 2021. Deposition testimony provided on May 25, 2021.
- *An Engineering Design Corporation v. Former CEO/Board Member, AAA*, related to damages calculation under claims of fraud and breach of fiduciary duty. Expert report filed on September 28, 2020. Deposition testimony provided on October 28, 2020. Arbitration testimony provided on April 20, 2021.



- *A California Real Estate Management Firm v. Global Real Estate Investment Company*, JAMS, related to wage and hour matter in connection with an indemnification claim. Arbitration hearing expert witness rebuttal report filed on October 12, 2020. Arbitration hearing testimony provided on November 30, 2020.
- *Paulette Fauceglia v. University of Southern California, et al.*, Case No. 2:19-vcv-04738-FMO-JEM, related to loss of earnings calculation for a wrongful termination claim. Expert report filed on August 10, 2020. Deposition testimony provided on October 2, 2020. Supplemental report filed on October 7, 2020.
- *Elizabeth Cuevas, et al. v. ConAm Management Corporation*, Case No. 3:18-cv-01189-GPC-LL, related to damages calculations on bonus overtime compensation in connection with an FLSA collective action. Expert report filed on August 3, 2020.
- *Juan Carlos Montoya, et al. v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 1:16-cv-10095-PBS, related to class-wide loss calculations in connection with a consumer frauds class action. Expert report filed on July 22, 2020. Deposition testimony provided on August 14, 2020. Rebuttal report related to FLSA collective and Iowa Wage Class claims, and consumer frauds class action, filed on August 21, 2020. Second deposition testimony provided on September 2, 2020.
- *Peter Kleinberg v. Landmark Dividend, LLC, et al.*, Case No. BC675252, related to breach of contract and wrongful constructive discharge damages. Deposition testimony provided on July 23, 2019. Trial testimony provided on November 21, 22, and 25, 2019.
- *Former Employee v. A Power and Renewable Energy Company*, JAMS, related to rebuttal damages calculation for a wrongful termination claim. Rebuttal summary of opinions provided on August 28, 2019. Deposition testimony provided on September 11, 2019. Arbitration testimony provided on November 20, 2019.
- *Yelter Cruz, et al. v. Gelson's Markets*, Case No. BC670061, related to data analysis in a wage and hour class action. Declaration filed on September 17, 2019. Deposition testimony provided on October 8, 2019.
- *Edward Jordan and De'Wana Hubbard v. City of Los Angeles*, Case No. BC575699, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on September 9, 2019.

SELECT EXPERT WITNESS AND CONSULTING EXPERIENCE

LABOR EMPLOYMENT

Representative assignments in labor employment matters:

- Expert witness services for defendant (a grocery store chain) in a California wage and hour class action alleging meal and rest breaks and rounding claims. Services included rebuttal analysis to plaintiffs' expert's statistical sampling method and calculations.
- Expert witness services for defendant (a trucking company) in an FLSA collective action. Services included rebuttal analysis to damages calculations related to unpaid wage claims.

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- Expert witness services for defendant (a university and its affiliated physician practice plan) in a gender discrimination class action. Services included statistical and econometric modeling to assist counsel with opposition to class certification.
- On-going consulting for a large company (a restaurant chain) to audit gender pay equity. Services included statistical and econometric modeling of compensation, and auditing periodic pay adjustments in order to ensure that the company complies with the California Fair Pay Act.
- Expert witness services for defendant (a construction company) in a case involving meal break violations. Services included submitting a declaration explaining statistical sampling, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Expert witness services for defendant (a health club) in a case involving meal break violations for non-managerial hourly employees. Services included analyzing electronic time clock and payroll records, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Consulting services for defendant (a lumber company) in a case involving meal break violations and unpaid overtime. Services included designing and supervising data entry of punch records to reliably capture all relevant information, analyzing punch records and payroll data, and preparing a summary of risk assessment to assist counsel with mediation.
- Consulting services for defendant (a home healthcare agency) in a case involving unpaid overtime claims. Services included analyzing a sample of time-keeping records and payroll data to assist counsel with mediation.
- Consulting services for defendant (a large grower of herbs) in a case involving meal break violations. Services included reviewing and analyzing time-keeping and payroll files from various time-keeping and payroll systems, in order to assist counsel with mediation.
- Expert witness services for defendant (a restaurant chain) in a class action discrimination case. Services included constructing analytical databases from human resources and payroll data, modeling the promotional process, performing statistical analyses to examine plaintiffs' claim of discrimination in promotion and pay, and assisting counsel with class certification defense.
- Expert witness services for defendant (a hospital) in a single-plaintiff discrimination claim. Services included rebutting opposing expert's lost earnings analysis and estimating economic damages.
- Consulting services for defendant (a pharmaceutical company) in a single-plaintiff wrongful termination claim. Services included rebutting opposing expert's calculation of lost employee stock options awards.
- Consulting services for defendant (a restaurant chain) in a case alleging unpaid time related to the donning and doffing of uniforms. Services included culling over 200 store manager declarations to build an analytical database, summarizing ranges of the donning and doffing time by uniform types, studying variations in the donning and doffing time by store and by shift, and performing statistical analysis to identify factors potentially impacting the donning and doffing time.
- Consulting services for defendant (a regional social services provider) in a case involving meal and rest break violations. Services included designing an observational/time-in-



motion study to evaluate plaintiffs' claims that service professionals were not provided opportunities for break during their work days.

- Consulting and expert witness services for defendant (a global defense, security, and aerospace systems company) in a wrongful termination matter alleging race discrimination. Services included evaluating the economic impact of the plaintiff's termination from his employer.
- Consulting and expert witness services for defendant (a restaurant chain) in a case involving meal and rest violations. Services included analyzing large time clock and transactional databases, designing statistical tests to assess the merit of the plaintiffs' claim of a company-wide policy for meal and rest violations, and filing a rebuttal report to assist counsel with a motion opposing class certification.
- Consulting services in connection with reduction in force (RIF). Services included performing adverse impact analysis on gender, race, and age, and critiquing the statistical analysis conducted by an EEOC expert.
- Consulting services in connection with an age discrimination claim brought forth by a sales rep at an investment bank. Services included analyzing compensation, sales and performance rating information for liability assessment, calculating lost earnings, and rebutting opposing expert's damage models.
- Consulting services for defendant in a case involving breach of contract allegation by a high-level executive in the gaming and high-tech industry. Services included estimating damages using information from analyst reports issued by major investment banks, and studying academic peer-reviewed journal articles that formed the basis of opinions on executive compensations in the high-tech industry.
- Consulting services for defendant's counsel in a wage and hours matter alleging uncompensated overtime and missed meal periods for a prospective class of hourly employees at a large transportation company. Services included designing and developing a daily punch-in/punch-out database and hours worked from a large number of electronic records, performing workweek calculation, estimating exposure, penalties, the value of per hour regular pay, per hour overtime pay and per hourly double-time pay, and assisting counsel with mediation.
- Consulting services in connection with research on gender discrimination in pay and promotion at a university. Services included estimating the difference in pay and merit increases by gender, identifying inputs into the compensation and academic award structure, and presenting findings to the faculty.
- Consulting services for the board of trustees in a university system in response to a labor union allegation of gender and racial discrimination in the faculty award policy. Services included statistical analyses of award records.
- Consulting services in several wrongful termination matters. Services included using detailed census and other data to estimate labor market availabilities by geographic location, evaluating job search efforts and mitigation opportunities, constructing financial models to compute economic damages under a variety of scenarios, rebutting opposing expert's analysis, and assisting counsel with cross-examination.
- Consulting and expert witness services for defendant (a large institution for national security) in a case involving an EEOC investigation of gender discrimination in pay and promotion. Services included creating analytical databases from human resource files,



employee job application and performance review paper documents, performing statistical tests and regression analyses to study the relationship between productivity-related variables, pay, and gender, and filing declarations to assist counsel with liability assessment.

- Consulting and expert witness services for defendant (a healthcare provider) in a case involving time-shaving, meal, and rest violations. Services included studying daily activity patterns of four types of healthcare workers, designing statistical tests to assess the merit of the plaintiffs' claims that the defendant had adopted a company-wide policy to systematically prune overtime entitled by its employees.
- Consulting services for defendant in connection with an allegation of age discrimination in promotion in a large biotech company. Services included processing large job history data and conducting statistical analyses of employment records.

COMMERCIAL AND CONTRACT DISPUTES

Representative assignments in commercial litigation and breach of contract matters:

- Appointed as the neutral technical advisor by the U.S. District of Kansas in a contract dispute brought by over 30,000 employees at a telecommunications company. Services included assisting the Court with understanding plaintiffs' and defendant's experts' big data analyses and damages calculations.
- Consulting services for plaintiff (a public company specializing in virtualization, cloud computing, and enterprise solutions) in a trade secrets and contract dispute matter. Services included calculating lost profits and unjust enrichment in connection with the alleged unlawful and unfair solicitation, raiding of employees, and theft of trade secrets.
- Expert witness services for plaintiff (an independent insurance agency) in an insurance payment dispute. Services included reviewing and rebutting opposing expert's sampling analysis and damages extrapolation.
- Expert witness services for plaintiff (a large home builder) in a legal malpractice claim related to class certification. Services included statistical sampling and damages calculations.
- Consulting services for plaintiff in a construction defects claim against a builder. Services included estimating, using a hazard model, the life span of pipes installed in certain residential neighborhoods during the class period.
- Consulting services in connection with FINRA (formerly NASD) arbitration in a breach of contract claim from a portfolio manager. Services included evaluating returns to portfolios and calculating lost earnings.
- Consulting services for defendant (a large bank) in a consumer class action. Plaintiffs in the prospective class alleged that the bank's practice of processing debit card transactions from highest to lowest dollar amount resulted in a higher number of overdraft fees assessed on customers' accounts than if debit card transactions were posted in the chronological order that they occurred. Services included critiquing Plaintiffs' expert's data and damage analyses, running alternative but-for scenarios for sampled customers' accounts, and calculating damages.



SECURITIES CLASS ACTION AND FINANCIAL MODELING

Representative assignments in securities class action and financial modeling:

- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.
- Consulting services for defendant (a large broker-dealer company) in connection with a derivative class action suit in which the plaintiffs alleged Section 10b-5 and other violations. Services included employing econometric approach to estimate a range of potential damages per share by taking into account the timing of information releases to the capital markets, and developing a multi-trader model to estimate the number of shares potentially damaged. The multi-trader model was used to account for shareholders' varying propensities to trade, correct for trading volume overstatements caused by market maker and specialist activities, and adjust shares outstanding for short interest, company insiders' beneficial ownership positions, and institutional shares not traded during the alleged fraud period.
- Consulting services for defendant (a high-tech company) in connection with an SEC investigation of options backdating practices. Services included conducting a series of statistical tests on the company stock option grant dates to identify those dates where the short-term return was unusually favorable.
- Consulting services for defendant (a state security entity) in a lawsuit brought forth by a securities trading company alleging \$500 million loss due to reduction in business capacity as a result of the 1993 bombing of the World Trade Center. Services included performing time-series regression models to address the issue of loss causation, calculating damages during the alleged business interruption period, and testing the sensitivity of model outcome by studying various time-to-maturity segments of the traded fixed income securities.
- Consulting services for defendant (an entertainment software company) in a breach of contract case brought by former managers. Services included stock options valuation using a modified version of the Black-Scholes Option Pricing Framework. The modification incorporates a marketability discount arising from sales restrictions and separation risk.

STATISTICAL ANALYSIS AND ECONOMETRIC MODELING

Representative assignments in statistical analysis and econometric modeling:

- Consulting services to determine patent family sample size for essentiality studies.
- Expert witness services on statistical sampling and damages calculations in a malpractice claim in connection with class certification.
- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.

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- Applied multi-variate regression analysis using panel data in class action pay discrimination matters. Models controlled for neutral seniority and productivity measures, and accounted for clustering effects.
- Performed one-sample binomial test with Mantel-Haenszel aggregation in class action promotion discrimination matters.
- Identified abnormal stock returns using regression analysis, controlling for market and industry-specific factors, in the context of an event study in securities class actions.
- Designed statistical sampling method and performed damages extrapolation with calculations of confidence interval and error rate.
- Performed regression analysis to project but-for sales, accounting for market condition, time trend, and seasonality.
- Performed regression analysis in the context of a wage and hour class action to identify statistical significance of store-specific characteristics on work-related issues at dispute.
- Applied hazard model in a construction defects claim to estimate the life span of pipes installed in certain residential neighborhoods during the class period.
- Conducted T-test and KS-test to evaluate any difference between two populations, in the context of class actions (for example, comparing relevant characteristics of the deponents with the class members not deposed).
- Conducted Chi-squared test to study any correlation between two variables, in the context of class actions (for example, comparing relevant characteristics of the sampled class members with the rest of the class not sampled).
- Performed adverse impact statistical analysis in class actions alleging discrimination in hiring or in termination.
- Evaluated EEOC experts' statistical and econometric analysis in Reduction-in-Force (RIF) investigations.

HONORS AND RESEARCH GRANTS

Phi Beta Kappa, Elected to Membership 1993

Far East Funding, 1994 - 97

National Institute on Aging, Program Project Grant (Award # P01 AG10120), "Early Indicators of Later Work Levels, Disease and Death", Robert W. Fogel, Principal Investigator. Senior investigator (September 2001 to August 2006)

PROFESSIONAL MEMBERSHIPS

American Economic Association

American Bar Association

Los Angeles Bar Association

Los Angeles Society of Chartered Financial Analysts

Orange County Bar Association

Jackson Hole, WY

Irvine, CA

Los Angeles, CA

Washington, DC

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COMMUNITY ACTIVITIES

Former Governor, Los Angeles Society of Chartered Financial Analysts

Former Board Member (2011 July - 2018 June), Board of Directors of the Los Angeles Center for Law and Justice, a legal-aid organization which provides education and direct representation in housing and family law for low-income communities in East Los Angeles

Former Board Member (2014 - 2016), The State Bar of California, Legal Services Trust Fund Commission, a program responsible for administration of revenue for the benefit of nonprofit legal aid organizations in California

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Attachment B

Materials Relied Upon

Legal Materials

- Complaint for Damages, Aug 3, 2023
- Defendant's Responses to Plaintiff's Special Interrogatories (Set 2), Aug 13, 2024

Expert Report and Related Materials

- Expert Report of Charles L. Baum, Ph.D, Aug 16, 2024

Depositions and Accompanying Exhibits

- Deposition of Mark Jordan Snookal, May 10, 2024

Bates-Stamped Documents

Bates Start

- NDP-SDT_000001
- SNOOKAL-00621
- SNOOKAL-00777
- SNOOKAL-01124
- SNOOKAL-01285
- SNOOKAL-01444
- SNOOKAL-01478
- SNOOKAL-01526
- SNOOKAL-01566
- SNOOKAL-01161

Bates End

- NDP-SDT_000003
- SNOOKAL-00636
- SNOOKAL-00778
- SNOOKAL-01128
- SNOOKAL-01301
- SNOOKAL-01477
- SNOOKAL-01507
- SNOOKAL-01527
- SNOOKAL-01567

Publicly Available Materials

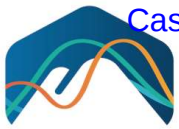
- Salary.com, "Cost of Living Comparison between Los Angeles, CA vs Vancouver, WA"

Other Materials

- Mark Snookal 2023 W2
- Mark Snookal Pay Record (08.31.2023)
- Mark Snookal Pay Record (09.15.2023)
- Mark Snookal Pay Record (09.29.2023)
- Mark Snookal Pay Record (10.13.2023)
- Mark Snookal Pay Record (10.31.2023)
- Mark Snookal Pay Record (11.15.2023)
- Mark Snookal Pay Record (11.30.2023)
- Mark Snookal Pay Record (12.15.2023)
- Mark Snookal Pay Record (12.29.2023)
- Mark Snookal Pay Record (01.12.2024)
- Mark Snookal Pay Record (01.31.2024)
- Mark Snookal Pay Record (02.15.2024)
- Mark Snookal Pay Record (02.29.2024)
- Mark Snookal Pay Record (03.15.2024)
- Mark Snookal Pay Record (03.29.2024)
- Mark Snookal Pay Record (04.15.2024)

Attachment B
Materials Relied Upon

- Mark Snookal Pay Record (04.30.2024)
- Mark Snookal Pay Records 2018-2021
- Mark Snookal Medical Benefit at Georgia Pacific
- Mark Snookal Dental Benefit at Georgia Pacific
- Mark Snookal HSA Benefit at Georgia Pacific
- Mark Snookal H&W Benefit Costs at Georgia Pacific
- Mark Snookal Retirement Benefit at Georgia Pacific
- Mark Snookal Vision Benefit at Georgia Pacific

**CHEN SONG, Ph.D., CFA**

Cirque Analytics
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Dr. Song is an economist, CFA charter holder, and expert witness. Since receiving her Ph.D. in economics from the University of Chicago, she has provided consulting and expert testimony in single-plaintiff, multiple-plaintiff, and class action discrimination disputes. Dr. Song has studied labor market definition and has applied techniques in statistics and econometrics to examine companies' employment practices: hiring, pay, promotion, termination, reduction in force, executive compensation, and pension benefits. Additionally, she has conducted pay equity studies to assist companies with identifying potential gender or minority pay gaps. Dr. Song routinely works with large databases and various types of HR, time reporting, and large-scale transactional databases to help counsel with wage and hour class actions concerning unpaid wages, meal and rest break violations, and employee misclassification. In California wage and hour class actions, she has applied data and statistical analyses to study issues related to class certification, and to calculate potential exposure to assist with mediation.

Dr. Song has been qualified as an expert witness in both Federal and State Courts, and has testified at arbitration and at trial. For over four years, Dr. Song was appointed by the United States District Court as a neutral Technical Advisor, to assist the Court and the Special Master with a complex employment class action, which resulted in a successful settlement that ended more than a decade of litigation.

Dr. Song's statistical and econometric expertise, which she frequently applies to study issues related to class certification and economic damages, includes applying econometric modeling tools, such as conducting statistical tests, performing regression analysis, and drawing statistical inferences based on robust empirical data analyses. Dr. Song's expertise in data analysis focuses on studying the statistical properties of data, making projections, statistical sampling, and the extrapolation of sample estimates to the population. Related to survey data analysis, Dr. Song has offered rebuttal opinions on a proposed choice-based conjoint (CBC) survey in a consumer class action.

Other areas of Dr. Song's expertise include applying complex financial modeling tools, for example stock option valuation, Monte Carlo simulation, event-study, and stress testing in connection with alleged trade secrets misappropriation, accounting fraud, and breach of contract damages calculations.

Dr. Song maintains a strong affiliation with the academic community. She taught courses on labor economics at the University of California, Irvine, and on financial institutions at California State University, Los Angeles. She currently teaches review courses on risk management for the Chartered Financial Analyst (CFA) program.

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EDUCATION

Ph.D. (Economics) (2000), University of Chicago
M.A. (Economics) (1995), University of Chicago
B.A. (Mathematics and Economics) (1993), Agnes Scott College

PROFESSIONAL EXPERIENCE

2021 April Senior Vice President of Cirque Analytics
2011 - 2021 Nathan Associates, Inc.
Senior Vice President: 2016 - 2021 April
Vice President: 2013 - 2016
Principal Economist: 2011 - 2013
2006 - 2010 Navigant Consulting, Inc.
Director: 2008 - 2010
Associate Director: 2006 - 2008
2000 - 2005 Resolution Economics, LLC
Senior Economist: 2003 - 2005
Economist: 2000 - 2003
2008 - 2021 Instructor, CFALA Review Program, Level III Risk Management
2007 - 2008 Adjunct Assistant Professor, California State University, Los Angeles
2000 - 2006 Senior Investigator, Center for Population Economics, University of Chicago
2004 Fall Lecturer, University of California Irvine
1992 - 1993 Intern, Federal Reserve Bank of Atlanta

EXPERT REPORTS, TESTIMONY, DECLARATIONS AND PROCEEDINGS (2019 May – Current)

- *Keith Huckaby, et al., v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 2:21-cv-07766-ODW-PD, related to rebuttal damages analysis in a wage and hour class action. Rebuttal expert report filed on May 1, 2023. Supplemental rebuttal report filed on November 6, 2023. Deposition testimony provided on July 25, 2024.
- *Georgina Puglisi v. Hillstone Restaurant Group, Inc.*, Case No. 30-2020-01154149-CU-WT-CJC, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on June 25, 2024.
- *Barry Broome, et al., v. CRST Malone, Inc.*, Case No. 2:19-cv-01917-MHH, related to rebuttal damages analysis in an FLSA Collective action. Rebuttal expert report co-authored with Eric Matolo filed on June 3, 2024.
- *Codie Rael v. Sybron Dental Specialties, Inc., et al.*, Case No. BC584994, related to workforce and economic loss analyses for age discrimination and constructive termination claims. Deposition testimony provided on April 24, 2024.
- *Anthony Cervantes and Mike Cross, individually and on behalf of all other persons similarly situated, v. CRST International, Inc., and CRST Expedited, Inc.*, Case No. 20-cv-0075-CJW-KEM, related to rebuttal damages analysis in an FLSA Collective and Rule 23 Class Action.

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Rebuttal expert report filed on December 8, 2023. Deposition testimony provided on January 10, 2024.

- *Berta Sosa v. Comerica Bank, et al.*, Case No. YC071851, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on August 2, 2019. Trial testimony provided on November 8, 2023.
- *Wade Pyun, Complainant, vs. U.S. Bank National Association, Respondent*, OALJ Case No. 2020-SOX-00023 & OSHA Case No. 9-3290-18-660, related to loss of earnings calculation. Expert report filed on March 9, 2023. Trial testimony provided on September 28 and 29, 2023.
- *The State of California, ex rel. Gregory Duncan and Gary Hulbert v. Sutter Health, et al.*, Case No. RG17846895, related to statistical sampling in connection with fraudulent medical billing claims. Declarations filed on October 10, 2022, October 21, 2022, December 19, 2022, April 13, 2023, and April 24, 2023. Expert report filed on June 20, 2023. Deposition testimony provided on July 26, 2023.
- *Angel Lujan v. Dover Pump Solutions Group, et al.*, Case No. 20STCV09522, related to economic loss calculation for a wrongful termination claim. Deposition testimony provided on July 18, 2023.
- *Michael Cash v. County of Los Angeles*, Case No. BC718190, related to rebuttal damages calculation under California Fair Employment and Housing Act (FEHA) claims. Deposition testimony provided on June 10, 2021. Trial testimony provided on June 13, 2023.
- *Male Excel Medical, P.A., and Male Excel, Inc. v. Signia Marketing, LTD.*, Case No. A-20-816167-C, related to damages calculations in connection with allegations of fraud. Expert report filed on December 17, 2021. Trial testimony provided on May 30, 2023.
- *Maria Martinez v. Pharmavite, LLC*, Case No. BC671153, related to loss of earnings calculation for a wrongful termination claim. Deposition testimony provided on January 8, 2021. Updated rebuttal analysis provided on February 21, 2023. Trial testimony provided on March 28, 2023.
- *Michele Lewana Evans and Melody Sprouse, et al., v. Downtown Women's Center*, Case No. 22STCV06578, related to data analysis in a wage and hour class action. Rebuttal expert declaration filed on March 20, 2023.
- *Maria Torres v. Southern California Permanente Medical Group, Kaiser Foundation Health Plan, Inc., and Kaiser Foundation Hospitals*, Case No. 19STCV42476, related to rebuttal damages calculation under disability discrimination claims. Rebuttal expert report filed on November 10, 2022.
- *Eric Pierce v. County of Los Angeles, et al.*, Case No. BC675062, related to rebuttal damages calculation under race discrimination claims. Deposition testimony provided on November 1, 2022.
- *Truinject Corp. v. Galderma, S.A., Galderma Laboratories, L.P., Nestlé Skin Health, Inc.*, Case No. 19-00592-VAC-JLH, providing rebuttal opinions to expert survey analysis in connection with allegations of breach of contract, patent infringement, and trade secret misappropriation claims. Rebuttal expert report co-authored with Nancy Mathiowetz, Ph.D., and filed on September 14, 2022.
- *Judy Garcia, Fidel Barrios, and Elyse Allahar, individually, and on behalf of all others similarly situated, v. Cardinal Health, Inc., and Cardinal Health 200, LLC.*, Case No. 37-2019-



- 00068269-CU-OE-CTL, related to data analysis in a wage and hour class action. Expert declaration filed on September 8, 2022.
- *Arthur J. Gallagher & Co., v. Tarantino, et al.*, Case No. 20-cv-05505-EMC, providing rebuttal financial analysis in connection with allegations of breach of contract and misappropriation of trade secrets. Rebuttal expert report filed on April 28, 2022. Deposition testimony provided on August 3, 2022.
 - *William M. Dorfman, D.D.S., dba Century City Aesthetic Dentistry v. Patti Cantor, Michael Kosdon, D.D.S., dba Kosdon Cosmetic Dentistry*, Case No. BC602388, related to trade secrets misappropriation and breach of contract claims. Deposition testimonies provided on March 6, 2020 and on April 16, 2022. Trial testimony provided on May 10, 2022 and June 1st, 2022.
 - *Margarita Ramirez v. World Oil Corp.*, Case No. 20STCV22351, related to rebuttal damages calculation under disability discrimination claims. Deposition testimony provided on January 24, 2022. Trial testimony provided on April 18 and April 19, 2022.
 - *Jeremy Gilmore, et al., v. Vansh, Inc. et al.*, Case No. HG18930348, related to data analysis in a wage and hour class action. Expert declaration filed on December 6, 2021.
 - *United States, v. Nancy Zak, Claud Clark III, EcoVest Capital, Inc., Alan N. Solon, Robert M. McCullough, and Ralph R. Teal Jr.*, Case No. 1:18-cv-05774-AT, providing rebuttal financial analysis in connection with allegations of violations of the internal revenue laws related to the donation of conservation easements and deductions claimed related to those easements. Rebuttal expert report filed on November 10, 2021. Deposition testimony provided on January 13, 2022.
 - *Jennifer Garcia, et al., v. Central Coast Restaurants, Inc. et al.*, Case No. 3:18-cv-02370-RS, related to data analysis in a wage and hour class action. Rebuttal expert report filed on October 29, 2021.
 - *Monica Barnett v. Costco Wholesale Corporation*, Case No. 2:20-cv-04896-ODW-JEMx, related to rebuttal damages calculation in discrimination claims. Rebuttal expert report filed on October 4, 2021.
 - *Lauryan Latravia Vargas v. Kaiser Foundation Health Plan, Inc.*, Case No. RIC1906237, related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 28, 2021. Trial testimony provided September 8, 2021.
 - *Department of Fair Employment and Housing (DFEH) v. Pathways Community Services, LLC, and Pathways Health and Community Support, LLC*, Case No. 30-2018-01039657-CU-CRCJC), related to rebuttal damages calculation in discrimination claims. Deposition testimony provided on July 16, 2021.
 - *In RE: MacBook Keyboard Litigation*, Case No. 5:18-cv-02813-EJD-VKD, related to rebuttal opinions on proposed choice-based conjoint and repair rate analyses. Rebuttal expert report filed on May 13, 2021. Deposition testimony provided on May 25, 2021.
 - *An Engineering Design Corporation v. Former CEO/Board Member, AAA*, related to damages calculation under claims of fraud and breach of fiduciary duty. Expert report filed on September 28, 2020. Deposition testimony provided on October 28, 2020. Arbitration testimony provided on April 20, 2021.
 - *A California Real Estate Management Firm v. Global Real Estate Investment Company*, JAMS, related to wage and hour matter in connection with an indemnification claim. Arbitration



hearing expert witness rebuttal report filed on October 12, 2020. Arbitration hearing testimony provided on November 30, 2020.

- *Paulette Fauceglia v. University of Southern California, et al.*, Case No. 2:19-vcv-04738-FMO-JEM, related to loss of earnings calculation for a wrongful termination claim. Expert report filed on August 10, 2020. Deposition testimony provided on October 2, 2020. Supplemental report filed on October 7, 2020.
- *Elizabeth Cuevas, et al. v. ConAm Management Corporation*, Case No. 3:18-cv-01189-GPC-LL, related to damages calculations on bonus overtime compensation in connection with an FLSA collective action. Expert report filed on August 3, 2020.
- *Juan Carlos Montoya, et al. v. CRST Expedited, Inc. and CRST International, Inc.*, Case No. 1:16-cv-10095-PBS, related to class-wide loss calculations in connection with a consumer frauds class action. Expert report filed on July 22, 2020. Deposition testimony provided on August 14, 2020. Rebuttal report related to FLSA collective and Iowa Wage Class claims, and consumer frauds class action, filed on August 21, 2020. Second deposition testimony provided on September 2, 2020.
- *Peter Kleinberg v. Landmark Dividend, LLC, et al.*, Case No. BC675252, related to breach of contract and wrongful constructive discharge damages. Deposition testimony provided on July 23, 2019. Trial testimony provided on November 21, 22, and 25, 2019.
- *Former Employee v. A Power and Renewable Energy Company*, JAMS, related to rebuttal damages calculation for a wrongful termination claim. Rebuttal summary of opinions provided on August 28, 2019. Deposition testimony provided on September 11, 2019. Arbitration testimony provided on November 20, 2019.
- *Yelter Cruz, et al. v. Gelson's Markets*, Case No. BC670061, related to data analysis in a wage and hour class action. Declaration filed on September 17, 2019. Deposition testimony provided on October 8, 2019.
- *Edward Jordan and De'Wana Hubbard v. City of Los Angeles*, Case No. BC575699, related to rebuttal damages calculation for a wrongful termination claim. Deposition testimony provided on September 9, 2019.

SELECT EXPERT WITNESS AND CONSULTING EXPERIENCE

LABOR EMPLOYMENT

Representative assignments in labor employment matters:

- Expert witness services for defendant (a grocery store chain) in a California wage and hour class action alleging meal and rest breaks and rounding claims. Services included rebuttal analysis to plaintiffs' expert's statistical sampling method and calculations.
- Expert witness services for defendant (a trucking company) in an FLSA collective action. Services included rebuttal analysis to damages calculations related to unpaid wage claims.
- Expert witness services for defendant (a university and its affiliated physician practice plan) in a gender discrimination class action. Services included statistical and econometric modeling to assist counsel with opposition to class certification.

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- On-going consulting for a large company (a restaurant chain) to audit gender pay equity. Services included statistical and econometric modeling of compensation, and auditing periodic pay adjustments in order to ensure that the company complies with the California Fair Pay Act.
- Expert witness services for defendant (a construction company) in a case involving meal break violations. Services included submitting a declaration explaining statistical sampling, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Expert witness services for defendant (a health club) in a case involving meal break violations for non-managerial hourly employees. Services included analyzing electronic time clock and payroll records, and rebutting plaintiffs' expert's analysis to assist counsel with opposition to class certification.
- Consulting services for defendant (a lumber company) in a case involving meal break violations and unpaid overtime. Services included designing and supervising data entry of punch records to reliably capture all relevant information, analyzing punch records and payroll data, and preparing a summary of risk assessment to assist counsel with mediation.
- Consulting services for defendant (a home healthcare agency) in a case involving unpaid overtime claims. Services included analyzing a sample of time-keeping records and payroll data to assist counsel with mediation.
- Consulting services for defendant (a large grower of herbs) in a case involving meal break violations. Services included reviewing and analyzing time-keeping and payroll files from various time-keeping and payroll systems, in order to assist counsel with mediation.
- Expert witness services for defendant (a restaurant chain) in a class action discrimination case. Services included constructing analytical databases from human resources and payroll data, modeling the promotional process, performing statistical analyses to examine plaintiffs' claim of discrimination in promotion and pay, and assisting counsel with class certification defense.
- Expert witness services for defendant (a hospital) in a single-plaintiff discrimination claim. Services included rebutting opposing expert's lost earnings analysis and estimating economic damages.
- Consulting services for defendant (a pharmaceutical company) in a single-plaintiff wrongful termination claim. Services included rebutting opposing expert's calculation of lost employee stock options awards.
- Consulting services for defendant (a restaurant chain) in a case alleging unpaid time related to the donning and doffing of uniforms. Services included culling over 200 store manager declarations to build an analytical database, summarizing ranges of the donning and doffing time by uniform types, studying variations in the donning and doffing time by store and by shift, and performing statistical analysis to identify factors potentially impacting the donning and doffing time.
- Consulting services for defendant (a regional social services provider) in a case involving meal and rest break violations. Services included designing an observational/time-in-motion study to evaluate plaintiffs' claims that service professionals were not provided opportunities for break during their work days.



- Consulting and expert witness services for defendant (a global defense, security, and aerospace systems company) in a wrongful termination matter alleging race discrimination. Services included evaluating the economic impact of the plaintiff's termination from his employer.
- Consulting and expert witness services for defendant (a restaurant chain) in a case involving meal and rest violations. Services included analyzing large time clock and transactional databases, designing statistical tests to assess the merit of the plaintiffs' claim of a company-wide policy for meal and rest violations, and filing a rebuttal report to assist counsel with a motion opposing class certification.
- Consulting services in connection with reduction in force (RIF). Services included performing adverse impact analysis on gender, race, and age, and critiquing the statistical analysis conducted by an EEOC expert.
- Consulting services in connection with an age discrimination claim brought forth by a sales rep at an investment bank. Services included analyzing compensation, sales and performance rating information for liability assessment, calculating lost earnings, and rebutting opposing expert's damage models.
- Consulting services for defendant in a case involving breach of contract allegation by a high-level executive in the gaming and high-tech industry. Services included estimating damages using information from analyst reports issued by major investment banks, and studying academic peer-reviewed journal articles that formed the basis of opinions on executive compensations in the high-tech industry.
- Consulting services for defendant's counsel in a wage and hours matter alleging uncompensated overtime and missed meal periods for a prospective class of hourly employees at a large transportation company. Services included designing and developing a daily punch-in/punch-out database and hours worked from a large number of electronic records, performing workweek calculation, estimating exposure, penalties, the value of per hour regular pay, per hour overtime pay and per hourly double-time pay, and assisting counsel with mediation.
- Consulting services in connection with research on gender discrimination in pay and promotion at a university. Services included estimating the difference in pay and merit increases by gender, identifying inputs into the compensation and academic award structure, and presenting findings to the faculty.
- Consulting services for the board of trustees in a university system in response to a labor union allegation of gender and racial discrimination in the faculty award policy. Services included statistical analyses of award records.
- Consulting services in several wrongful termination matters. Services included using detailed census and other data to estimate labor market availabilities by geographic location, evaluating job search efforts and mitigation opportunities, constructing financial models to compute economic damages under a variety of scenarios, rebutting opposing expert's analysis, and assisting counsel with cross-examination.
- Consulting and expert witness services for defendant (a large institution for national security) in a case involving an EEOC investigation of gender discrimination in pay and promotion. Services included creating analytical databases from human resource files, employee job application and performance review paper documents, performing statistical tests and regression analyses to study the relationship between productivity-



related variables, pay, and gender, and filing declarations to assist counsel with liability assessment.

- Consulting and expert witness services for defendant (a healthcare provider) in a case involving time-shaving, meal, and rest violations. Services included studying daily activity patterns of four types of healthcare workers, designing statistical tests to assess the merit of the plaintiffs' claims that the defendant had adopted a company-wide policy to systematically prune overtime entitled by its employees.
- Consulting services for defendant in connection with an allegation of age discrimination in promotion in a large biotech company. Services included processing large job history data and conducting statistical analyses of employment records.

COMMERCIAL AND CONTRACT DISPUTES

Representative assignments in commercial litigation and breach of contract matters:

- Appointed as the neutral technical advisor by the U.S. District of Kansas in a contract dispute brought by over 30,000 employees at a telecommunications company. Services included assisting the Court with understanding plaintiffs' and defendant's experts' big data analyses and damages calculations.
- Consulting services for plaintiff (a public company specializing in virtualization, cloud computing, and enterprise solutions) in a trade secrets and contract dispute matter. Services included calculating lost profits and unjust enrichment in connection with the alleged unlawful and unfair solicitation, raiding of employees, and theft of trade secrets.
- Expert witness services for plaintiff (an independent insurance agency) in an insurance payment dispute. Services included reviewing and rebutting opposing expert's sampling analysis and damages extrapolation.
- Expert witness services for plaintiff (a large home builder) in a legal malpractice claim related to class certification. Services included statistical sampling and damages calculations.
- Consulting services for plaintiff in a construction defects claim against a builder. Services included estimating, using a hazard model, the life span of pipes installed in certain residential neighborhoods during the class period.
- Consulting services in connection with FINRA (formerly NASD) arbitration in a breach of contract claim from a portfolio manager. Services included evaluating returns to portfolios and calculating lost earnings.
- Consulting services for defendant (a large bank) in a consumer class action. Plaintiffs in the prospective class alleged that the bank's practice of processing debit card transactions from highest to lowest dollar amount resulted in a higher number of overdraft fees assessed on customers' accounts than if debit card transactions were posted in the chronological order that they occurred. Services included critiquing Plaintiffs' expert's data and damage analyses, running alternative but-for scenarios for sampled customers' accounts, and calculating damages.

SECURITIES CLASS ACTION AND FINANCIAL MODELING

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Representative assignments in securities class action and financial modeling:

- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.
- Consulting services for defendant (a large broker-dealer company) in connection with a derivative class action suit in which the plaintiffs alleged Section 10b-5 and other violations. Services included employing econometric approach to estimate a range of potential damages per share by taking into account the timing of information releases to the capital markets, and developing a multi-trader model to estimate the number of shares potentially damaged. The multi-trader model was used to account for shareholders' varying propensities to trade, correct for trading volume overstatements caused by market maker and specialist activities, and adjust shares outstanding for short interest, company insiders' beneficial ownership positions, and institutional shares not traded during the alleged fraud period.
- Consulting services for defendant (a high-tech company) in connection with an SEC investigation of options backdating practices. Services included conducting a series of statistical tests on the company stock option grant dates to identify those dates where the short-term return was unusually favorable.
- Consulting services for defendant (a state security entity) in a lawsuit brought forth by a securities trading company alleging \$500 million loss due to reduction in business capacity as a result of the 1993 bombing of the World Trade Center. Services included performing time-series regression models to address the issue of loss causation, calculating damages during the alleged business interruption period, and testing the sensitivity of model outcome by studying various time-to-maturity segments of the traded fixed income securities.
- Consulting services for defendant (an entertainment software company) in a breach of contract case brought by former managers. Services included stock options valuation using a modified version of the Black-Scholes Option Pricing Framework. The modification incorporates a marketability discount arising from sales restrictions and separation risk.

STATISTICAL ANALYSIS AND ECONOMETRIC MODELING

Representative assignments in statistical analysis and econometric modeling:

- Consulting services to determine patent family sample size for essentiality studies.
- Expert witness services on statistical sampling and damages calculations in a malpractice claim in connection with class certification.
- Consulting services for enforcement in an accounting investigation. Services included supporting an academic affiliate in preparing a rebuttal report on the topic of delisting risk and its potential costs to investors.
- Applied multi-variate regression analysis using panel data in class action pay discrimination matters. Models controlled for neutral seniority and productivity measures, and accounted for clustering effects.

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- Performed one-sample binomial test with Mantel-Haenszel aggregation in class action promotion discrimination matters.
- Identified abnormal stock returns using regression analysis, controlling for market and industry-specific factors, in the context of an event study in securities class actions.
- Designed statistical sampling method and performed damages extrapolation with calculations of confidence interval and error rate.
- Performed regression analysis to project but-for sales, accounting for market condition, time trend, and seasonality.
- Performed regression analysis in the context of a wage and hour class action to identify statistical significance of store-specific characteristics on work-related issues at dispute.
- Applied hazard model in a construction defects claim to estimate the life span of pipes installed in certain residential neighborhoods during the class period.
- Conducted T-test and KS-test to evaluate any difference between two populations, in the context of class actions (for example, comparing relevant characteristics of the deponents with the class members not deposed).
- Conducted Chi-squared test to study any correlation between two variables, in the context of class actions (for example, comparing relevant characteristics of the sampled class members with the rest of the class not sampled).
- Performed adverse impact statistical analysis in class actions alleging discrimination in hiring or in termination.
- Evaluated EEOC experts' statistical and econometric analysis in Reduction-in-Force (RIF) investigations.

HONORS AND RESEARCH GRANTS

Phi Beta Kappa, Elected to Membership 1993

Far East Funding, 1994 - 97

National Institute on Aging, Program Project Grant (Award # P01 AG10120), "Early Indicators of Later Work Levels, Disease and Death", Robert W. Fogel, Principal Investigator. Senior investigator (September 2001 to August 2006)

PROFESSIONAL MEMBERSHIPS

American Economic Association

American Bar Association

Los Angeles Bar Association

Los Angeles Society of Chartered Financial Analysts

Orange County Bar Association

COMMUNITY ACTIVITIES

Former Governor, Los Angeles Society of Chartered Financial Analysts

Former Board Member (2011 July - 2018 June), Board of Directors of the Los Angeles Center for

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Law and Justice, a legal-aid organization which provides education and direct representation in housing and family law for low-income communities in East Los Angeles
Former Board Member (2014 - 2016), The State Bar of California, Legal Services Trust Fund
Commission, a program responsible for administration of revenue for the benefit of
nonprofit legal aid organizations in California

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